METIman®

User Guide

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KYS Technology

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METIman® Simulator Software and Users Guide©

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METIman Specifications

Size

Mannequin/Simulator	74″ H x 26″ W x 11″ D (188cm x 66cm x 28cm)

Weight

Mannequin/Simulator	100 lbs (45.36 kg)

Environmental Requirements

Ambient Temperature Range

Mannequin/Simulator

Operation:	40°F to 104°F (4°C to 40°C)
Storage:	40°F to 122°F (4°C to 50°C)
Relative Humidity:	0% to 90% non-condensing

Power

Mannequin/Simulator

AC Input:	AC 90 – 240VAC, 50/60Hz
Consumption:	70W nominal
Internal Batteries:	18.5V lithium-ion, rechargeable
Run Time:	4 hours (Typical)

Communications

Simulator Network

Wired:	10/100 Ethernet or
Wireless:	IEEE 802.11g

Wireless Voice

537 MHz to 819MHz (Country Specific)

Electrotherapy

Defibrillation:	20 to 360 joules (Monophasic, Biphasic)
Pacing:	20mA to 180mA

Air Supply

When using the optional external compressed air kit in conjunction with the facility supply source and facility wall adapter:

Supported source pressure: 50 psi to 120 psi

CO_2 Supply

When using the optional external CO_2 kit in conjunction with the facility CO_2 source and facility wall adapter:

Supported source pressure: 30 psi to 120 psi

Cautions/Warnings

Please read and understand these cautions and warnings before you begin using the METIman system.

USE OF THIS EQUIPMENT IN AN UNSPECIFIED MANNER MAY IMPAIR DESIGNED PROTECTION.

Your safety is in your hands. Be sure to follow the instructions on the proper setup, breakdown and use of the METIman system.

SHOCK HAZARD

Electrical Safety

- This product must be connected to an electrical outlet that is properly grounded. Precautions should be taken so that grounding or polarization is not defeated.
- Do not place defibrillator paddles on or adjacent to the ECG patient electrodes. Contact between defibrillator paddles and the electrodes may cause injury to the user and damage to the equipment.
- Always use the supplied power cords. Do not substitute.
- Always use the supplied power adapter to run the simulator from AC.
- Operate the system from a power source with the following rating:
  - 115VAC, 50/60 hertz (cycles per second) (e.g., North America, Japan)
  - 230VAC, 50/60 hertz (cycles per second) (e.g., Europe)
- Do not allow excess fluids to flow on or into electronic parts.
- Do not attempt to disassemble the simulator or service any of the electrical components other than the resetting of circuit breakers.

General Use Warnings

Electrical System

- Operate the system from a power source with the following rating: 115VAC, 50/60 hertz (cycles per second) (e.g. North America, Japan), and 230VAC, 50/60 hertz (cycles per second) (e.g. Europe)
- Do not operate the METIman system in rain. Apply water to the mannequin only in accordance with the supported clinical procedures identified in this User Guide.
- Do not allow excess fluids to flow on or into electronic parts.

CO_2 Production System

- Care must always be taken when using high-pressure equipment.
- Do not disassemble or alter regulator.
- Store CO_2 canisters in dry location between 32° and 104° F. (0 to 40°C). Do not expose CO_2 canister to heat above 140° F as rupture may occur.
- Never point CO_2 canister towards your face or someone nearby.
- Use only CAE Healthcare specified CO_2 canisters.
- Wear protective gloves and eye protection when removing canister from regulator assembly.

Bleeding and Secretion System

- DO NOT modify the tank or any assembly component.
- ALWAYS protect eyes, skin and clothing against accidental exposure.
- NEVER exceed 35 strokes while pressurizing the tank.
- ALWAYS read and follow instructions for creating trauma fluids (e.g. blood). NEVER fill the tank with more than 6 liters (1.6 gallons) of fluid.
- After use, ALWAYS release pressure and clean the tank. DO NOT store liquids in the tank.
- ALWAYS release tank pressure before servicing. NEVER transport or ship in a pressurized and/or full state or leave a pressurized tank unattended.

Mannequin

- Do not disassemble factory-assembled parts of the mannequin.
- Do not clean the mannequin with chemical solvents. Use water and a light soap solution only.
- Make sure that mannequin is set up on a stable, sturdy work surface to avoid collapsing and causing injury to users.
- METIman should be operated in ambient temperatures below 104° F (40° C).
- Do not introduce foreign substances into the airway - with the exception of small amounts of approved lubricant. Only perform invasive procedures supported by the system as described in the applicable sections of the User Guide.
- Do not pick the mannequin up by the limbs — support head and leverage weight with torso. It may be necessary to have the help of a second person to lift and move METIman.

Latex Warning

CAE Healthcare simulators incorporate latex into their design. When performing certain maintenance procedures, the latex can become exposed. Users with latex sensitivity should take necessary precautions when handling the simulator while performing those procedures.

Battery

General Warnings

METIman uses Li-ion batteries. Li-ion batteries have special requirements during handling to avoid hazardous situations.

- The Polymer Li-ion Battery pack should be stored indoors and be kept far from fire and high temperatures.
- Do not store batteries with hairpins, coins, screws or other similar objects.
- Do not heat the battery.
- Do not throw the battery into a fire.
- Do not use or leave the battery close to heat or flame.
- Do not use the battery inside of a car where temperature may exceed 80˚C (176˚F). Also do not charge/discharge the battery in such conditions.
- Do not short-circuit the positive (+) and negative (-) terminals with other metals.
- Do not place the battery in a device with the positive (+) and negative (-) terminals in the incorrect positions.
- Do not strike the battery with force.
- Do not step on, throw or drop or drop the battery to cause strong shock.
- Do not disassemble or modify the battery.
- Do not solder a battery directly.
- Do not use a battery that has been damaged or deformed.

Additional Warnings

- Stop charging the battery if the battery has not completed charging within the specified time.
- When leakage or foul odor is detected, do not use and keep away from heat or flame.
- Immediately wash thoroughly with fresh water if liquid leaks onto your skin or clothes.
- If liquid leaking from the battery gets into your eyes, do not rub your eyes. Immediately wash eyes completely with clean water and seek medical attention.
- If the amount of time the battery is able power the equipment diminishes significantly, the battery life is at an end. Replace the battery with a new battery of the exact same make and model.
- Immediately remove a battery whose life cycle has expired from the equipment.
- When the battery is thrown away, apply vinyl tape to the positive (+) and negative (-) terminals to avoid short circuits.
- When not using battery for an extended period, remove it from the equipment and store it in a place with low humidity and temperature.
- In all instances, keep the battery away from objects or materials with static electric charges.
- The battery can be used within the following temperature range. Do not exceed this range:

  Charge temperature range: 0˚C (32˚F) to 45˚C (113˚F)

System Requirements

If you are not using a TouchPro computer provided by CAE Healthcare, please be sure to utilize a computer with wireless capability. When operating the TouchPro software, a computer with a Macintosh® or Microsoft Windows® operating system may be used.

To run the TouchPro software, the computer used must meet the following minimum requirements:

Macintosh® Operating System

- Mac OS X 10.5.8 (minimum)
- Safari® 5.x.x or Firefox® 10 ESR (minimum)
- Adobe Flash Player® 10.1.x.x (minimum)
- Adobe Reader 9.x (or higher)

Windows® Operating System

- XP Service Pack 2, Vista, Windows 7 or Windows 8
- Firefox® 10 ESR, Internet Explorer® 8 or Safari 5.x.x (minimum)
- Adobe Flash Player® 10.1.x.x (minimum)
- Adobe Reader 9.x (or higher)

Hardware (Windows and Macintosh)

- Intel Core Duo, 2.0 GHz (minimum)
- 2 GB DDR3 RAM (minimum)
- 8 GB Hard Drive space available
- 1024x768 screen resolution (minimum)
- USB 2.0
- Wireless 802.11b/g/n Ethernet card
- 100BASE-T Ethernet Adapter

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Introduction

METIman Nursing and Prehospital simulators give you all the power of CAE Healthcare's cutting edge simulation technology with more of what you want. METIman Nursing was created by nurses to teach the fundamentals of nursing practice, and METIman Prehospital was built for medics by medics. Both simulators are less expensive than other simulators, are easy to use and have everything you need with nothing you don't.

METIman

METIman is fully wireless with on-board fluid, pneumatic and electrical systems and is built tough to withstand a wide variety of real-life, indoor and outdoor learning environments. METIman comes with extensive clinical features and capabilities designed specifically for emergency medical personnel and nurses.

The simulator can be placed on standard operating room tables, on an ICU bed, on the ground or even in a vehicle (in the case of a simulated accident). METIman can also be seated in an upright position.

In addition, METIman has the assessment, cardiovascular, genitourinary and trauma features familiar to CAE Healthcare customers plus an SpO_2 finger probe, fluids on board, bilateral noninvasive blood pressure and IV access. Wireless and tetherless, METIman takes simulation education to a new and exciting level of realism.

Equipment Overview

METIman has been designed to be used in any learning environment. METIman's standard features are easily integrated into a laboratory setting or remote locations.

Standard Components Inventory

METIman comes with all the necessary equipment for establishing an educational simulation center.

	Standard Equipment
☐	METIman Simulator
☐	Battery Charger and External Power Supply
☐	Instructor Workstation (Laptop or Tablet)
☐	CO_2 Canisters (Prehospital Only)
☐	Inventory Kit
☐	Wireless Microphone or Wireless Voice Link
☐	Trauma Fill Tank

NOTE: As you would with any shipment, cross-check this inventory with your CAE Healthcare packing invoice to verify that all components have been received.

Optional Components Inventory

Optional equipment is available to accommodate special customer requirements. For example, options like an air compressor, METIVision and METI FX enable instructors to create real-life scenarios at authentic locations.

	Optional Equipment
	METIman Replacement Lithium Battery
	External Compressed Air Kit
	External CO_2 Kit
	Air Compressor
	Hands-Free Training Cables
	METIman Learning Applications and Training Courses
	Tool Kit
	METIVision
	METI FX
	Moulage Kit

Contact CAE Healthcare Customer Service at 866-462-7920 if there are any questions or if optional equipment is needed.

METIman Standard Equipment

METIman comes with standard equipment that allows students and instructors the ability to create an endless number of possible clinical situations. The following equipment is provided with your METIman simulator.

Full-Body Wireless Simulator

All patient assessments and clinical interventions are played out on the METIman mannequin, which represents a human patient. At six feet, two inches (188 cm) in height and weighing 100 pounds (45.36 kg), METIman is fully operational in the supine, lateral, prone and seated positions. The simulator offers features like arm pronation and supination; breath, heart and bowel sounds; palpable pulses; patient voice; and genitourinary features.

Battery Charger and External Power Supply

The simulator is rechargeable using the **Battery Charger** provided.

Instructor Workstation (Laptop or Tablet)

The Instructor Workstation is a computer that utilizes Müse Software to operate as the main simulation control center.

Instructors control the simulation session from the Workstation by using SCEs that meet their learning objectives.

The standard METIman configuration includes a choice of Laptop Instructor Workstation or a ruggedized Tablet Instructor Workstation.

CO_2 Canisters (Prehospital Only)

Four CO_2 canisters are included with METIman to supply the on-board CO_2 exhalation feature.

Inventory Kit

iStan comes with a number of accessories and replacement components.

Included in the Inventory Kit are:

- iStan Start-Up Kit (Quick Start Chart and Setup Map)
- iStan Logo Accessories
- Priming syringe
- Roll (4 ft) of VHB tape and roll of 2-inch-wide red tape (for cricothyrotomy)
- Cricothyrotomy skin
- BP adapter kit
- Silicone lubricant
- Chest tube priming tube
- ECG posts
- Pacing/Defibrillation disks
- Condensation drain
- Wound umbilicals
- SpO_2 probe
- Female genitalia
- VGA mini adapter

Wireless Microphone

The wireless receiver enables the user to communicate through the simulator using a microphone. The clip-on microphone is attached to a transmitter that may be attached to a belt or waistband.

Wireless Microphone

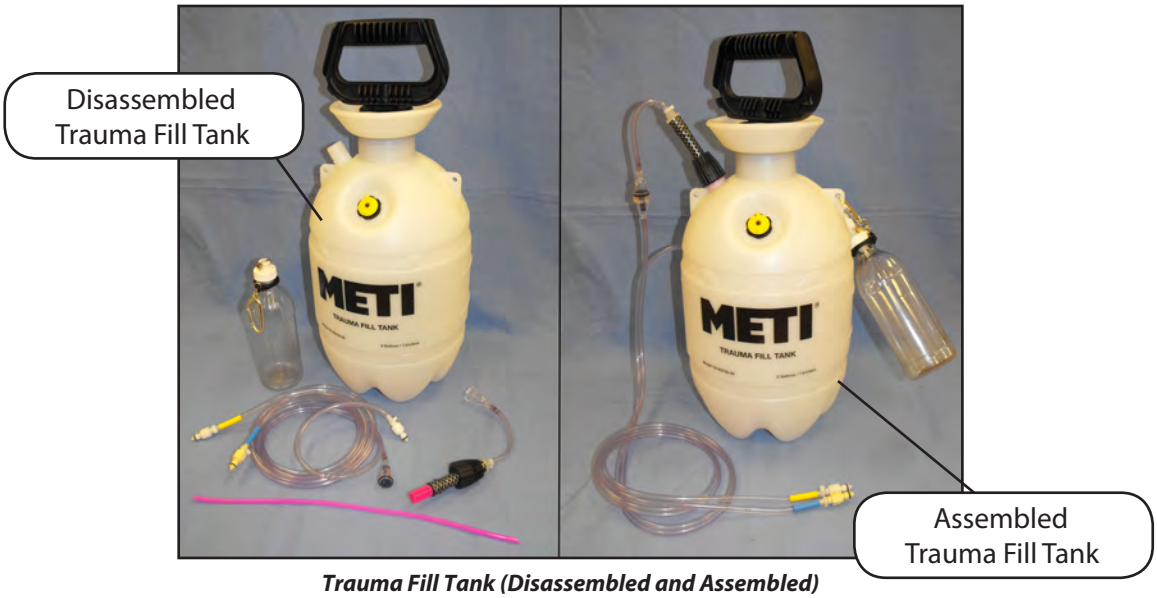
The microphone is battery-operated and has a power switch on the top to turn it on and off.

Wireless Voice Link

The wireless voice link replaces the wireless microphone feature in some METIman simulators and comes packaged separately. *For more information about this feature, see Appendix B -Wireless Voice Link on page B-1.*

Trauma Fill Tank

Fluids are supplied to the simulator using a trauma fill tank. One tank is supplied and can be used for distilled water mixed with red food coloring to create simulated blood.



Trauma Fill Tank (Disassembled and Assembled)

This tank should be cleaned after each use.

Optional Equipment for METIman

Additional components enable the METIman system to be customized to fit the specific needs of a wide variety of education environments.

METIman Replacement Lithium Battery

Under normal usage, a battery pack should last up to two years.

External Compressed Air Kit

The External Compressed Air Kit gives the user the ability to connect METIman to a CAE Healthcare compressor, tank or wall air using the kit's hose and fittings. When connecting to wall air, the kit attaches to the customer's wall adapter.

External Compressed Air Kit

The internal pump turns off automatically when external compressed air is sensed.

The External Compressed Air Kit includes a flexible 30 ft (9 m) hose attached to a preset air regulator, a fitting for air compressors and adapters for wall or tank air.

External CO_2 Kit

The External CO_2 Kit gives the user the ability to connect METIman to an external source of CO_2 (30-120 psi). The External CO_2 Kit includes a flexible 30 ft (9 m) hose attached to a preset air regulator and an adapter for wall or tank fittings.

Air Compressor

An air compressor (product #AIR-003) designed for quiet operation is available for same-room use, and an alternative air compressor (product #AIR-002) is available for situations where the compressor resides in a location, such as a storage room, set apart from the simulator.

Both Air Compressors are AC powered and include a regulator and an air hose with the appropriate connector fitting.

A 220VAC/50 Hz version of the Quiet In-Room Air Compressor (product #AIR-004) is also available.

Hands-Free Training Cables

Hands-Free Training Cables connect to most popular defibrillators and cardiac pacing units and take the place of non-reusable electrode pads.

Three different cable designs are available to support the most popular defibrillation and pacing equipment. Each cable kit includes posts that attach to the defibrillator or pace locations on METIman.

Physio-Control (Medtronic, Inc.)

(product #ACC-005)

Zoll (Zoll Medical Corporation)

(product #ACC-006)

Philips (Koninklijke Philips Electronics, N.V.)

(product #ACC-007)

METIman Learning Applications and Training Courses

METIman Learning Applications

CAE Healthcare Learning Applications enhance the use of the simulator by providing preprogrammed scenarios and corresponding support documentation (i.e., course objectives, instructor's notes) that can be readily integrated into a lesson plan, a specific curriculum or an educational program.

EMS Learning Application 1 (EDU-047)

Adult Nursing Learning Apllication (EDU-071)

METIman Training Courses

METIman Basic and Advanced courses offer learners at all levels in-depth instruction in the setup, operation, development of scenarios and maintenance related to the use of METIman.

The METIman Basic course provides learners with an overview of the system and its components, as well as an introduction to patient creation and scenario design.

METIman Basic - two days at CAE Healthcare facility (TRN-018)

METIman Basic On-Site - two days at learner-defined facility (TRN-020)

The METIman Advanced course builds upon the concepts introduced in the prerequisite Basic course. After a quick review of the Basic course, Advanced instruction spends the majority of the two days providing learners with the ability to design patients and scenarios that can be used immediately upon completion of the course.

METIman Advanced - two days at CAE Healthcare facility (TRN-019)

METIman Advanced On-Site - two days at learner-defined facility (TRN-021)

Tool Kit

To simplify common adjustments and periodic repairs, CAE Healthcare has put together a kit containing tools selected for use with the simulator (product #TOL-001).

Tool Kit

METIVision

METIVision is a fully integrated, digital audio-visual management system that is data-synchronized in real-time for use with CAE Healthcare simulators. METIVision is the only solution available with the capability not only to capture and store simulation data, but to broadcast and review any medical simulation exercise using CAE Healthcare simulators. Complete with physiologic data logs, event logs, pharmacology logs and patient monitoring data, METIVision offers the capability to provide a complete record of your simulation exercise for debriefing, assessment and evaluation (product #MTV-001).

METIVision Console

METI FX

CAE Healthcare takes realism to the next level with METI FX: a realistic set of advanced moulage wound simulation and special effects. METI FX includes incredibly lifelike wounds that accurately replicate muscle, tissue and subcutaneous fat and reflect the true physical nature of a wound and its treatment. And, METI FX comes complete with CAE Healthcare's own educational learning tools – a set of how-to treatment cards explaining procedures and learning objectives for both civilian and military patient scenarios (product #MFX-100).

METI FX Simulation

Moulage Kit

The kit provides the materials needed to create wounds on METIman (product #MODS-999).

Moulage Kit

The Moulage Kit may also be ordered separately.

METIman Setup

The following pages will guide you through assembling and configuring METIman. Below is a list of steps required to prepare METIman for operation.

1	Place METIman in the Work Area
2	Connect the Lower Legs to METIman
3	Power On METIman
4	Power On the Instructor Workstation
5	Connect to the METIman Network
	Connect the SpO_2 Probe (Optional)
	Connect the External Air (Optional)
	Insert the CO_2 Canister (Optional, Prehospital Only)
	Detach the Arms (Optional)
	Prepare the Bleeding System (Optional)
	Connect the TouchPro (Optional)

Before Beginning Setup

Proper operation of the METIman simulation unit requires correct configuration. Before setting up the system, keep in mind these basic guidelines:

Understand the Cautions and Warnings information located in the Introduction section of this User Guide.

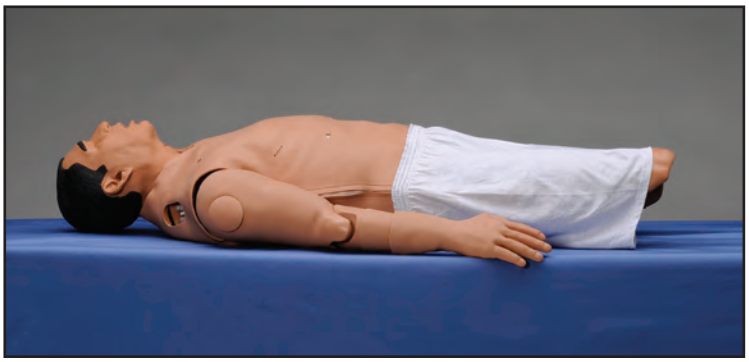
- Follow the sequence of steps carefully.
- Complete all steps in order.
- Do not power on any components until instructed in the text.
- KEEP all original shipping materials, including BOXES — warranty and repair items must be return shipped to CAE Healthcare in their original packaging.

When unpacking METIman for the first time, careful use of a box cutter protects both the packaging and the product.

A Setup Map, included with the unit, covers these same steps in abbreviated fashion.

Step 1: Place METIman in the Work Area

Select a work area with enough room for all equipment, providing ample space for easy access to the simulator. At a least 10' x 12' (3 meter x 4 meter) work area is recommended for movement and positioning of components around the simulator.



Positioning METIman

METIman and the Laptop or Tablet Instructor Workstation can be operated from their batteries, allowing for wireless use.

In a lab environment, make sure a multi-plug AC power outlet exists within the workspace to recharge the simulator's battery and its powered components.

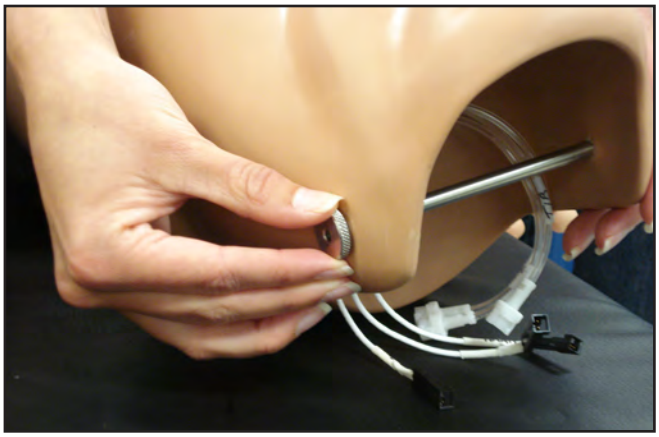
Before placing the simulator on a surface, be certain the surface can easily support 200 pounds.

NEVER lift the simulator by the LIMBS. When lifting, be sure to support the torso and head of the simulator while lifting.

Step 2: Connect the Lower Legs to METIman

NOTE: Use extreme care when handling the sensor cables and pulse tubes. NEVER let a leg hang off a surface without the locking pin securely in place. Doing so can seriously damage the sensor cables and pulse tubes.

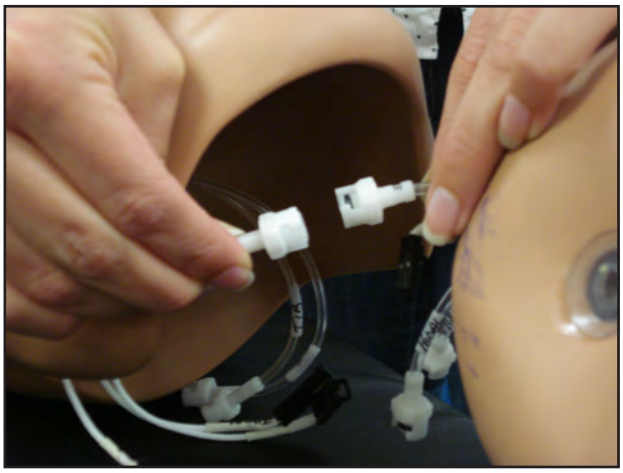
a. On each leg, at the knee, remove the locking pin from its position.



Removing the Locking Pin

b. Place lower limbs in their correct positions, leaving enough room to manipulate connectors.

c. On each leg, match and connect the color-coded tubing to the three white tubing connectors.



Connecting Tubing

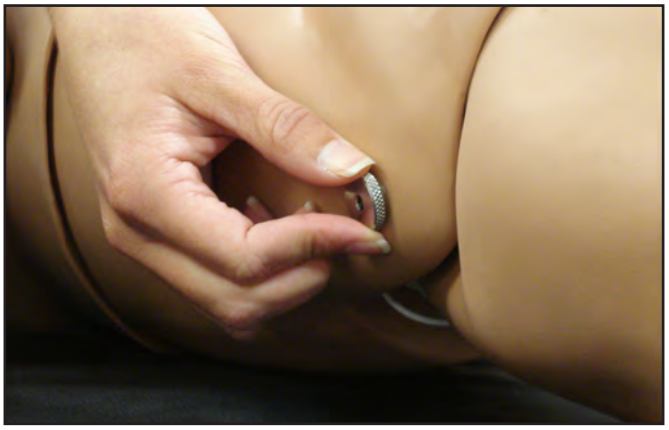
d. Match and connect the color-coded tubing to the three black electrical connectors.

Connecting Electrical

e. Carefully place tubes and cables in the hole on the lower leg.

f. Align holes on the knees and insert the locking pin.

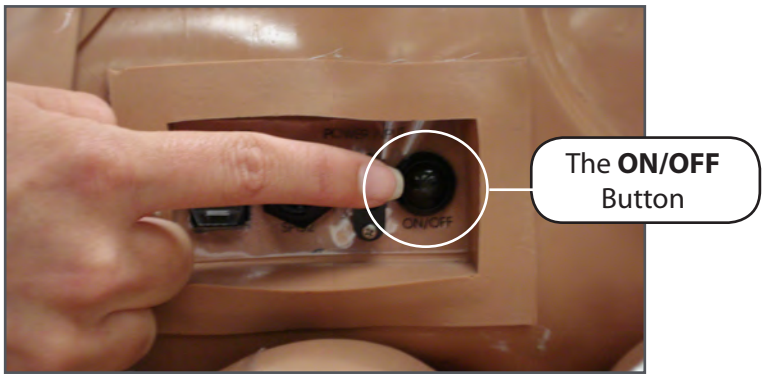
g. Screw the nut on the locking pin, holding it in place.



Affixing the Locking Pin

Step 3: Power On METIman

a. Locate the **ON/OFF** button beneath the skin covering METIman's left hip.



METIman's ON/OFF Button

b. Press and hold the **ON/OFF** button for one second. The power light blinks, indicating the system is busy. In approximately one minute, the light stops blinking and remains solid, indicating the simulator is now ready.

NOTE: METIman can be operated continuously for approximately four hours without recharging the battery.

Step 4: Power On the Instructor Workstation

a. Place the Laptop or Tablet Instructor Workstation near METIman in a convenient location.

b. Ensure the Instructor Workstation battery is fully charged, or connect the AC adapter to the workstation and a surge-protected power outlet.

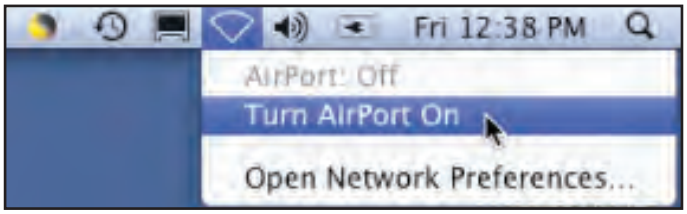
c. Power on the Instructor Workstation.

Step 5: Connect to the METIman Network – Laptop Instructor Workstation (Macintosh) Option

a. Click the **AirPort** icon located in the top-right-hand corner of the screen.

Clicking the AirPort Icon

b. If the **AirPort** is not on, select **Turn AirPort On**.

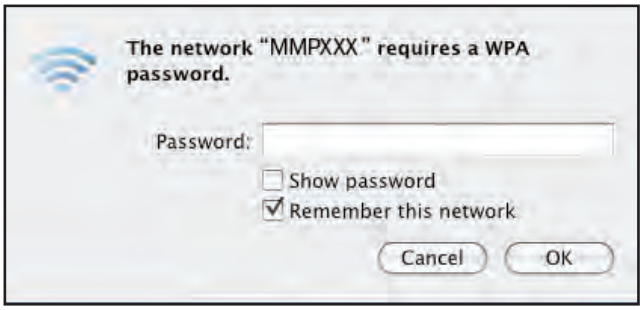


Activating the AirPort Card

c. Select the network (e.g., **MMPXXX** or **MMNXXX**, where XXX is the simulator's unit number).

Selecting the Network

The AirPort dialog box appears.



The AirPort Dialog Box

d. Enter the password *metiadmin* into the **Password** field.

e. Click **OK**.

Connecting to the METIman Network

The Müse software can now be launched.

Step 5: Connect to the METIman Network – Tablet Instructor Workstation (Microsoft Windows) Option

Once METIman and the Instructor Workstation are both powered on, they automatically establish a wireless connection and, when the Internet Explorer browser is opened, the Müse software launches. If the auto-connect does not occur, perform the following steps:

1. Tap on the **Wireless Network** icon in the task bar.
2. Select the METIman wireless network (e.g., MMPXXX or MMNXXX, where XXXX is the serial number for the unit). The network password is *metiadmin* and the password is case-sensitive.
3. Click the **Connect** button.

   The wireless connection is established. The Müse software can now be launched using Internet Explorer.

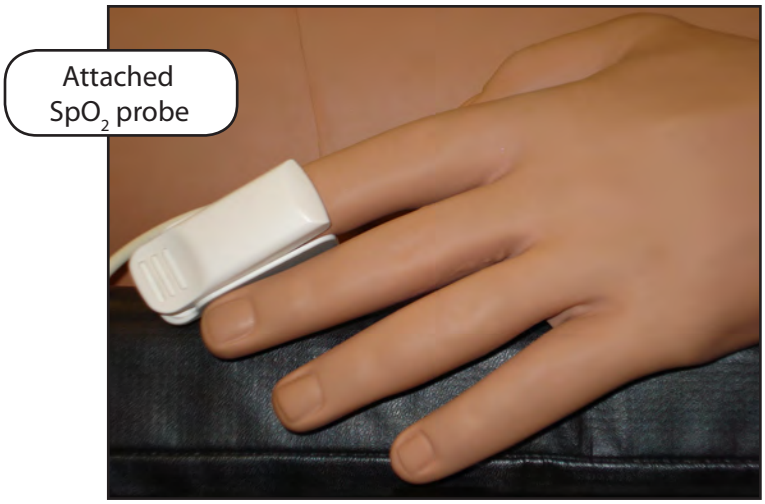
Optional: Connect the SpO_2 Probe

Connect and attach the SpO_2 probe to METIman.

a. Locate the **SPO_2** port on METIman's left hip.

b. Connect the SpO_2 probe to the **SPO_2** port.

c. Place the SpO_2 probe on METIman.



Attached SpO_2 Probe

The probe must be connected to view pulse oximetry data on the TouchPro software.

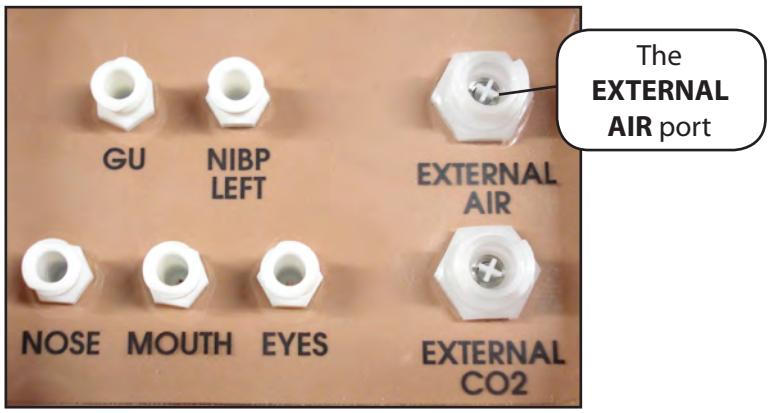
Optional: Connect External Air

Using the External Air kit allows METIman to be run by an external air source rather than the internal compressor. The air hose can be connected to or disconnected from METIman at any time. When the external air pressure is sensed, the pump internal to METIman turns off automatically. When you want to make METIman mobile again, simply disconnect the hose.

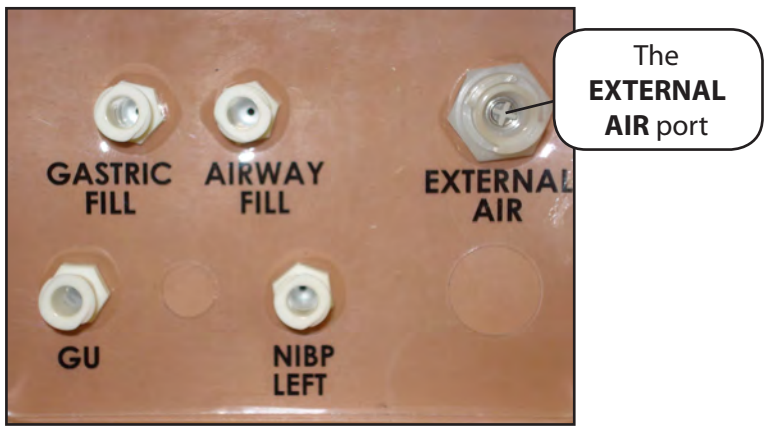
The optional External Compressed Air Kit consists of a flexible 30 ft (9 m) hose attached to a preset air regulator and a fitting for air compressors and adapters for wall or tank air.

To connect the air hose:

1. Connect the External Compressed Air Kit to a CAE Healthcare compressor using the Quick Coupler attached to the regulator. (Other compressed air sources have their own adapters. Locate the adapter for your compressed air source.)
2. Connect the other end of the External Compressed Air Kit to the **EXTERNAL AIR** port on the left shoulder.



METIman Prehospital's Left Shoulder



METIman Nursing's Left Shoulder

Optional: Insert the CO_2 Canister (Prehospital Only)

Some SCEs include the simulation of CO_2 exhalation. The following instructions show how to safely connect the CO_2 canister to the simulator.

WARNING: Careful handling, including the use of eye protection, is required when using CO_2 canisters.

Please read and understand all the important cautions and warnings on removing canisters as well as safety steps that must be used when handling CO_2 canisters.

Use of CO_2 Canisters

- Store the CO_2 canisters in a dry location between 32° and 104° F. (0° to 40°C)
- Do not expose the CO_2 canister to heat above 140° F, as rupture may occur.
- Never point the CO_2 canister toward your face or someone nearby.
- Use only CAE Healthcare specified CO_2 canisters.
- Do not remove the canister from the regulator base until empty. The canister end is punctured when screwed into the regulator base.
- Never ship the CO_2 canister attached to the regulator assembly.

Assembly of the CO_2 Regulator

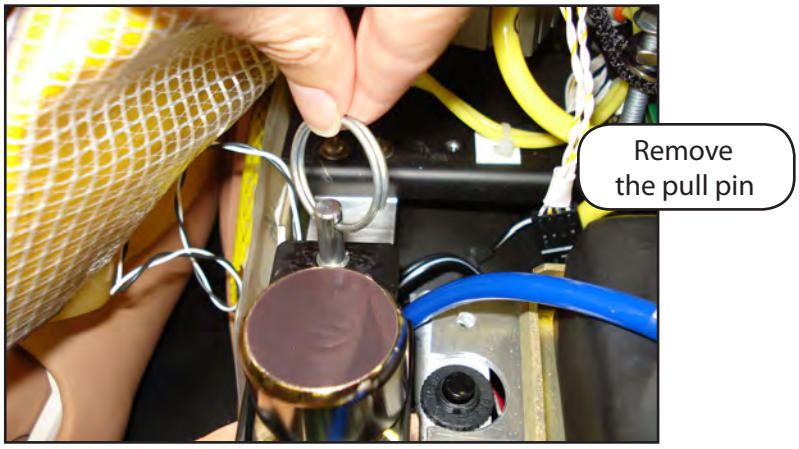
- Care must always be taken when using high-pressure equipment.
- Do not disassemble or alter the regulator.
- Dry completely if the regulator becomes wet.
- Discontinue use of this equipment if leakage or visible damage is evident.

Insertion of the CO_2 Canister (Prehospital Only)

To insert the CO_2 canister:

a. Lift the chest skin at the waist and lift the abdominal insert.

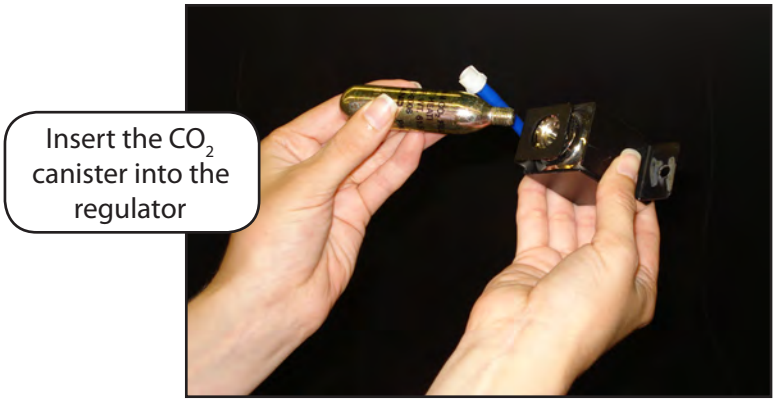
b. From the simulator's right midsection, remove the pull pin and disconnect the blue CO_2 hose.



Remove the Pull Pin

c. Remove the regulator from the simulator.

d. While holding the regulator firmly, carefully twist the CO_2 canister into the regulator as far as it will go. The final turns puncture the CO_2 canister, which is necessary for correct operation.

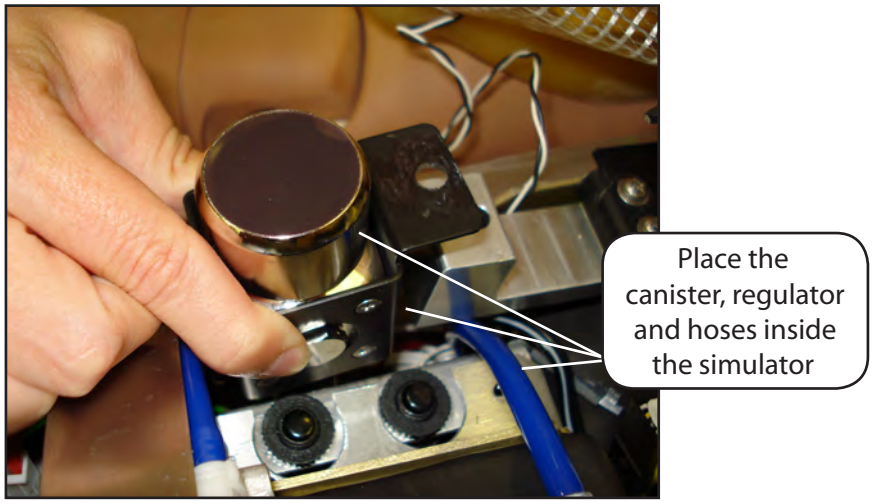


Connecting the CO_2 Canister

CAUTION: Do not loosen the canister once it has been inserted into the regulator assembly until the contents are exhausted and pressure relieved.

CAUTION: Removing the canister before it is empty results in the sudden release of all high-pressure gas with a possibility of liquid CO_2 spray. Unprotected skin could receive freezing burns.

e. Place the CO_2 canister, regulator and hoses inside the simulator. Use the pull pin to secure this assembly to the tray. A properly installed assembly will have the CO_2 canister pointed down toward the rear of the simulator.



Placing the Canister, Regulator and Hoses

f. Attach the blue CO_2 hose to the connection on the regulator.

g. Carefully reposition the abdominal insert and pull the skin back over the simulator to its original location.

Once the canister and regulator assembly are in place, CO_2 is measurable with a disposable $ETCO_2$ detector during positive pressure ventilation.

Based on the training environment, a CO_2 canister may last from 10 minutes (rapid ventilation) to 25 minutes.

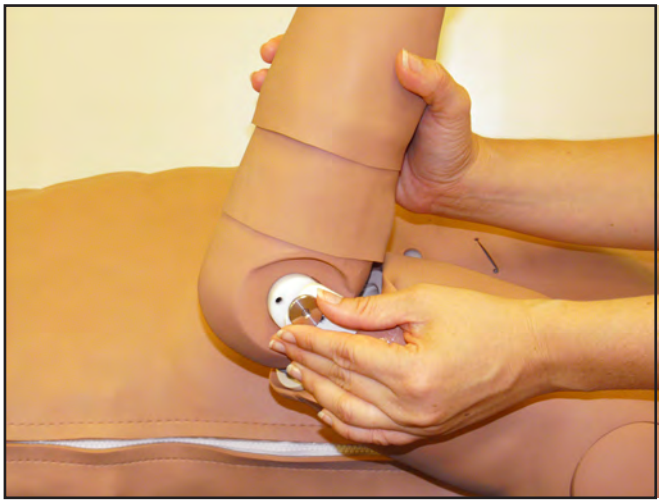
See important Cautions and Instructions for removing, transporting and disposing of the CO_2 canisters in the Care and Maintenance section.

Optional: Detach the Arms

METIman's arms may be removed for use with trauma scenarios.

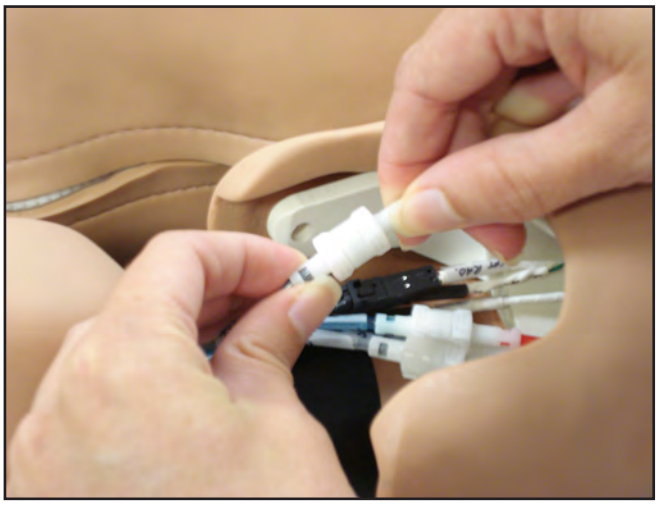
To detach METIman's arms:

1. Unscrew and remove the locking pin at the elbow.



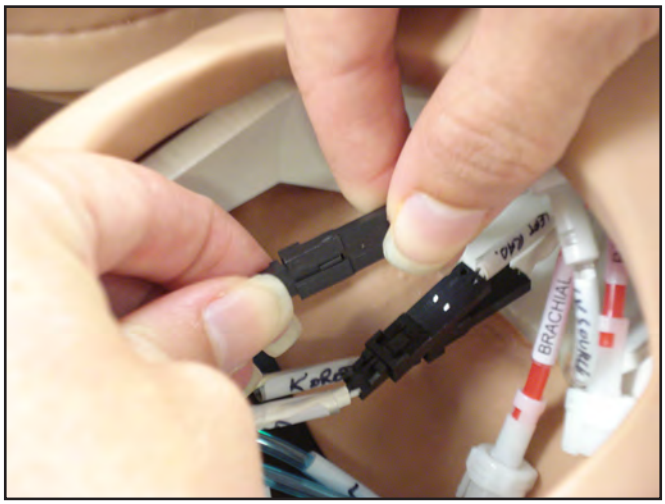
Removing the Locking Pin

2. Carefully separate the lower arm from the upper arm.
3. Twist to disconnect the four tubing connectors (white).



Disconnecting the Tubing

4. Squeeze to disconnect the three electrical connectors (black).



Disconnecting the Electrical Connectors

5. Place the loose connectors carefully within the upper arm.

NOTE: When replacing arms, ensure tubing and electrical connectors are matched using the color-coding.

Optional: Prepare the Bleeding System

ONLY distilled water or distilled water containing food coloring should be used with the secretion system.

A mixture of no more than 29 mL (1 oz) red food coloring with 3.8 liters (1 gallon) of distilled water should be used to create simulated blood. The blood mixture should be created in advance in a separate distilled water container.

NOTE: The higher the ratio of food coloring, the greater the possibility of staining.

Using the Trauma Fill Tank

The Trauma Fill Tank is used to fill the on-board blood reservoir.

CAUTIONS and WARNINGS

Carefully follow all instructions for using the Trauma Fill Tank. Pay particular attention to the following cautions and warnings:

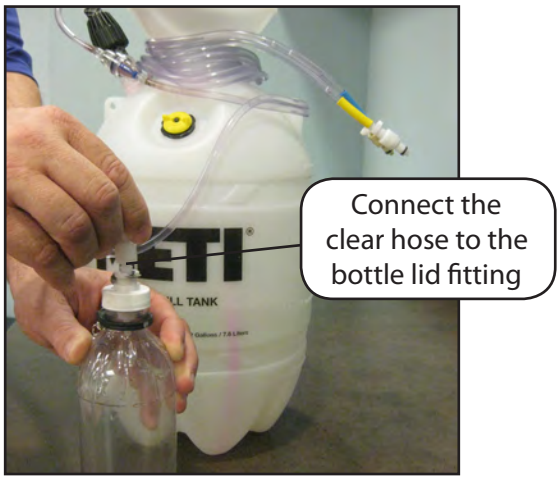
- ALWAYS read and follow instructions for creating trauma fluids (e.g. blood).
- ALWAYS protect eyes, skin and clothing against accidental exposure.
- After use, ALWAYS release pressure and clean the tank.
- ALWAYS release tank pressure before servicing.
- DO NOT modify the tank or any assembly component.
- DO NOT store liquids in the tank.
- NEVER transport or ship in a pressurized and/or full state.
- NEVER leave a pressurized tank unattended.
- NEVER fill the tank with more than 6 liters (1.6 gallons) of fluid.
- NEVER exceed 35 strokes while pressurizing the tank.

Attaching the Overflow Bottle to the Trauma Fill Tank Assembly

The overflow bottle is used to collect overflow when the METIman on-board tank is filled.

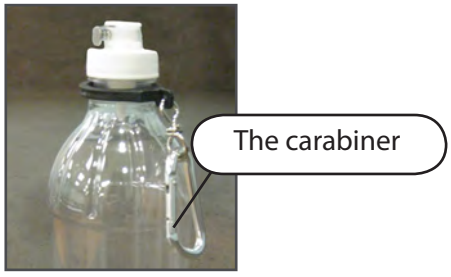
To attach the Overflow Bottle to the Trauma Fill Tank:

1. Connect the clear trauma fill tank hose to the bottle lid fitting.



Connecting the Trauma Fill Tank Umbilical to the Overflow Bottle

2. Clip the bottle to the tank using the attached carabiner mechanism.



The Carabiner

Operating the Trauma Fill Tank

Be careful to complete the following steps correctly to ensure proper use and maintenance of the METIman and its peripherals.

Step 1: Pour the Fluid into the Trauma Fill Tank

Pour the desired amount of fluid into the Trauma Fill Tank, being careful to NOT to exceed 6 liters (1.6 gallons) of fluid.

NOTE: The right thigh tank holds 1.5 liters and is used for blood.

Three (3) liters of simulated blood provides enough fluid to fill the right thigh reservoir twice. The amount of blood used in a training session varies with the patient, the wounds simulated and the learner's experience.

Step 2: Connect the Trauma Fill Tank Connector to the Simulator

a. Locate the tan **FILL** port and white **VENT** port.

b. Connect the **FILL** (with the tan label) and **VENT** (with the white label) hoses of the Trauma Fill Tank to the corresponding ports on the simulator

Both connections must be made for correct operation.

Step 3: Pressurize the Trauma Fill Tank and Fill the On-Board Blood Reservoir

An integrated hand pump is used to create the pressure for the Trauma Fill Tank.

WARNING: To prevent ejected pump assembly and/or solution from striking and injuring you, NEVER stand with your face or body directly over the top of the tank when pumping or loosening the pump.

To operate the pump and fill the reservoir:

a. Unlock the pump handle by turning counter-clockwise. (Be careful not to loosen the pump from the tank.)

b. Stroke the pump handle up and down from 25 to 35 times to transport 2 liters of simulated blood to the on-board blood reservoir. NEVER exceed 35 strokes while pressurizing the tank.

c. Lock the pump handle back into the pump assembly by turning clockwise.

d. Watch the Overflow Bottle located on the tank assembly. When liquid begins to appear in this bottle, the on-board blood reservoir is full. (Filling the on-board blood reservoir takes approximately 3 to 5 minutes.)

Step 4: Release Pressure from the Trauma Fill Tank

Immediately release pressure from the tank by turning and holding the yellow pressure relief knob clockwise until all air pressure is gone.

If pressure will not release using the relief knob:

a. Place a rag over the top of the tank and pump handle.

b. While firmly pushing down on the pump handle, slowly turn the handle counter-clockwise.

NEVER leave a pressurized tank unattended.

Step 5: Disconnect the Trauma Fill Tank Umbilical from the Simulator

Disconnect the Trauma Fill Tank Umbilical from the simulator and store the assembly out of the way for later use.

After use, ALWAYS release pressure and clean the tank.

Preparing for Storage

After filling and using the Trauma Fill Tank and the simulator's blood reservoir, both must be cleaned for storage.

Step 1: Clean the Simulator and Fluid System

When the simulation is completed and the Trauma Fill Tank has been disconnected, remove the fluids and clean the simulator *(see Cleaning the Simulator and the On Board Bleeding System in the Care and Maintenance section of this User Guide).*

Step 2: Clean the Trauma Fill Tank

Before storing the Trauma Fill Tank, make sure the equipment is clean *(see Cleaning the Trauma Fill Tank in the Care and Maintenance section of this User Guide.)*

Step 3: Store the Trauma Fill Tank

After cleaning, the Trauma Fill Tank assembly should be stored securely for future use.

a. Allow the interior of the tank to dry by loosening the pump assembly. Do NOT leave the pump assembly out of bottle, however, because dust contaminates the system.

b. Loosely wrap the Trauma Tank Umbilical around the neck of the tank to protect it.

c. Store all components in a clean, dry area.

Optional: Connecting a TouchPro Computer to the Wireless Network

The CAE Healthcare TouchPro computer is pre-configured for use with METIman. If you wish to supply your own TouchPro computer, use the following instructions to connect the computer to the METIman network.

Up to two additional computers may be used to run the TouchPro software. The additional computers must meet the TouchPro Software Specifications mapped out in *the Muse and TouchPro Specifications section of this User Guide on page xii*. Follow the steps below to use the TouchPro software on a TouchPro computer.

Step 1: Set Up METIman

The METIman simulator must be set up and powered on, and the Instructor Workstation must be powered on and connected to the METIman network. If you have followed the complete setup procedure, you may proceed to Step 2.

Step 2: Obtain METIman's IP Address

METIman's IP address is the same as the IP address used to access the Müse software on the Instructor Workstation. It can be found in the **Address** field of the web browser on the Müse Start screen.

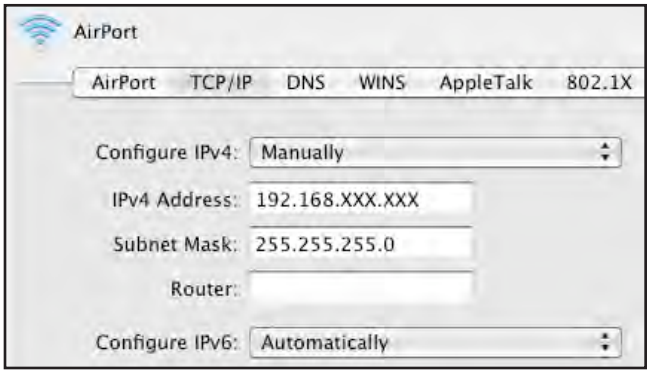
The Müse Start Screen

IMPORTANT: The IP address is different for each simulator.

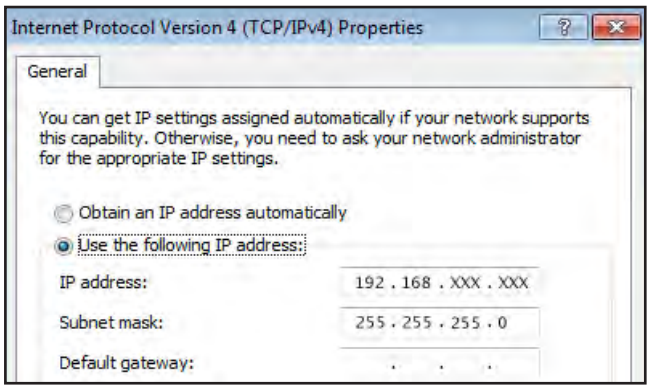
NOTE: If the **Address** field does not appear, check the view settings of your browser. In Safari, access the **View** menu and select **Show Toolbar**.

Step 3: Configure the TouchPro Computer's Network Settings

Access the Networking screens (the TCP/IP settings screens) for your operating system. If you are unfamiliar with these screens, contact your Network Administrator or CAE Healthcare Customer Service (1-866-462-7920) for help with this step.



TCP/IP Network Screen – Macintosh


Internet Protocol Version 4 (TCP/IPv4) Properties
General
You can get IP settings assigned automatically if your network supports this capability. Otherwise, you need to ask your network administrator for the appropriate IP settings.
Obtain an IP address automatically
Use the following IP address:
IP address:
192 . 168 . XXX . XXX
Subnet mask:
255 . 255 . 255 . 0
Default gateway:

Internet Protocol Version 4 (TCP/IPv4) Properties Screen – Windows

Enter a unique IP address in the **IP address** or **IPv4 Address** field and a subnet mask in the **Subnet Mask** field.

The unique IP address must match the IP address obtained in Step 2 except for the number after the third and final period. This number can be any number between 2 and 254 BUT must be different from the final number of the IP address obtained in Step 2 (METIman's IP address) and the IP address of the Instructor Workstation and any other computers on the network. No two IP addresses can be the same, including the Instructor Workstation's IP address.

Unique IP Address: 192.168.XXX.XXX

Subnet Mask: 255.255.255.0

Router/Gateway: (Leave Blank)

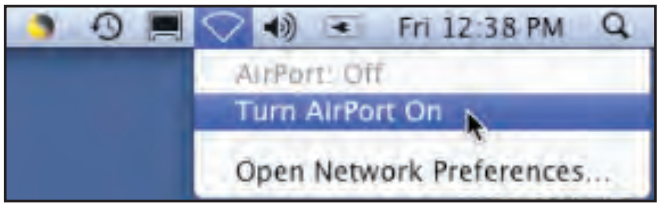
Example: If the IP address of your METIman is 192.168.206.5, and the IP address of your Instructor Workstation for your METIman is 192.168.206.10, you could assign the TouchPro computer the IP address 192.168.206.20.

Step 4 – Option 1: Join the METIman Network Using a Macintosh Operating System

a. Click the **AirPort** icon located in the top-right-hand corner of the screen.

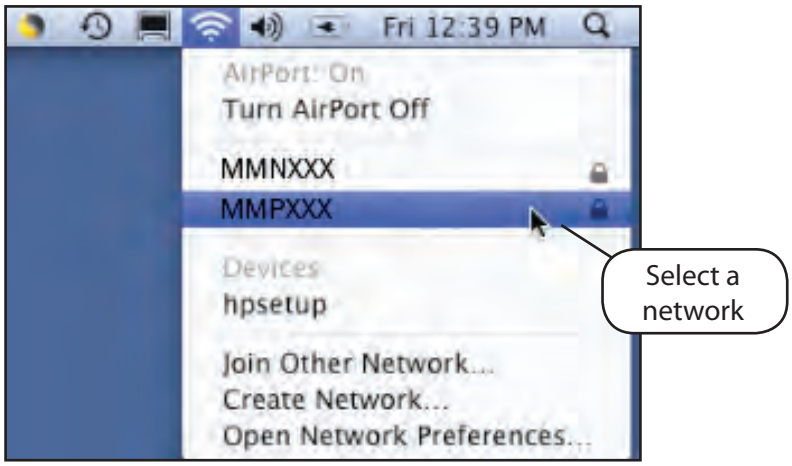
Clicking the AirPort Icon

b. If the **AirPort** is not on, select **Turn AirPort On**.



Selecting Turn AirPort On

c. Select the network - e.g., for METIman Prehospital, **MMPXXX** (where XXX is the simulator's unit number).



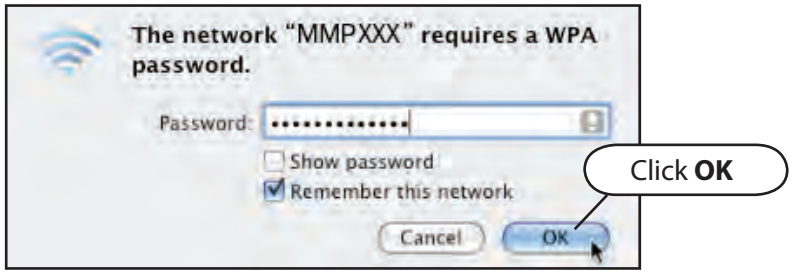
Selecting METIman's Network

The AirPort dialog box appears.

The AirPort Dialog Box

d. Enter the password *metiadmin* into the **Password** field.

e. Click **OK**.



Connecting to METIman's Network

The computer has joined the METIman network. You can now proceed to **Step 5**.

Step 4 – Option 2: Join the METIman Network Using a Windows Operating System

a. Click the **Wireless Network** icon located in the bottom-right-hand corner of the screen.

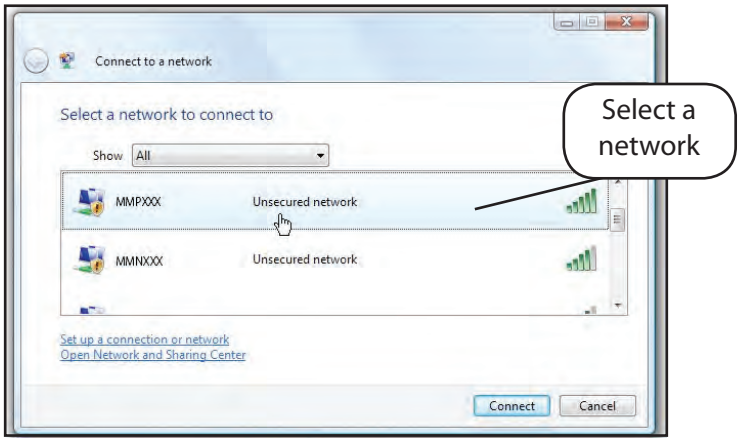
Clicking the Wireless Network Icon

b. Click **Connect to a Network**.

Clicking Connect to a Network

The Connect to a network dialog box appears.

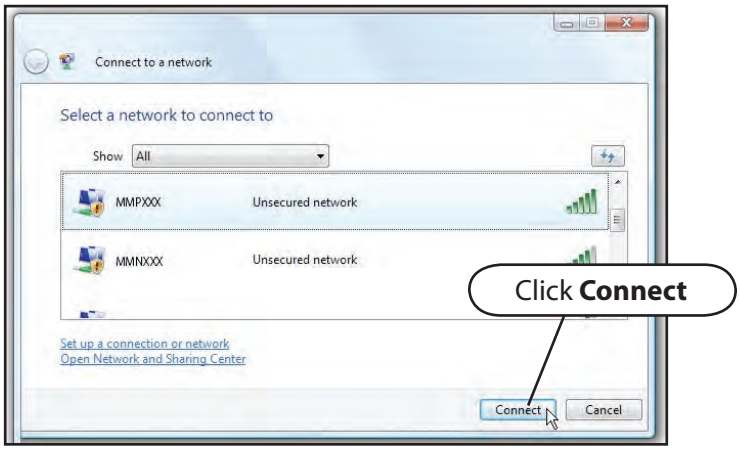
c. Select the network, i.e., METIman Prehospital **MMPXXX** (XXX is the simulator's unit number).



Selecting METIman's Network

d. If prompted for a password, enter *metiadmin* into the available field

e. Click **Connect**.



Connecting to METIman's Network

The computer has joined the METIman network. You can now proceed to **Step 5**.

Step 5: Access the Software from the TouchPro Computer

a. On the TouchPro computer, launch the web browser (e.g., Safari®).

b. Enter the IP address obtained in **Step 2** into the browser's address field. The Müse Start screen appears.

The Müse Start Screen

The TouchPro software can now be launched.

OPTIONAL: From your web browser, a bookmark can be created on the TouchPro computer for ease of access to the Müse or TouchPro software. Please consult your web browser's help menu for aid in creating a bookmark.

IMPORTANT: The Instructor Workstation MUST remain on and connected to the METIman network for the TouchPro computer to be able to operate.

Using Müse

The Müse software is a browser-based application that can communicate directly with the simulator.

With the software, users can run SCEs, create scenarios and SCEs, import and export educational content and perform administrative functions.

NOTE: For optimal Müse performance, no other software programs should be open while Müse is running.

IMPORTANT: Only one Müse application window or tab and one TouchPro window or tab can be used per Instructor Workstation at a time.

IMPORTANT: Do NOT use any of the browser's navigational tools (i.e., back and forward buttons) while operating Müse.

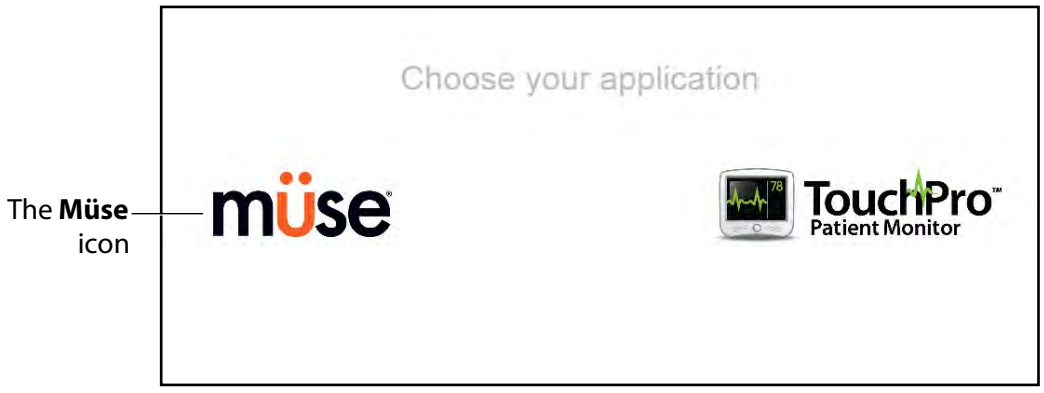
Starting the Application

Once the simulator is powered on and the Instructor Workstation is connected to the simulator network, the Müse software can be launched.

To launch the software:

1. Using the Laptop or Tablet Instructor Workstation, launch the web browser (e.g., Safari, Internet Explorer)

   The Müse Start Screen appears.



The Müse Start Screen

2. Select **Müse**.

The Login screen appears.

The Müse Login Screen

The links in the bottom left corner of the screen provide access to additional information about the software:

- Click the **About** link to access information about the Müse software version, the type of simulator and the serial number.
- Click the **User Guide** link to download the user guide (English version). To access the User Guide in other languages, please visit www.caehealthcare.com and click the **Support** link.
- Click the **Support** link for CAE Healthcare Support contact information.
- Click the globe-shaped **Language** icon in the bottom left corner to change the language of the Müse software.

3. On the Login screen, enter the **Username** *admin* and the **Password** *admin* in the appropriate fields to access Müse.

The Müse Login Fields

Müse opens to the Home page by default.

Navigating the Home Page

From the Home page, users can run, create, edit, search for and print SCEs.

The Home page can be accessed by clicking the **Home** button in the upper right corner of the Müse software or, on any screen without a **Home** button, by clicking the **Return** button in the upper left or right corner of the screen.

müse
All
Anaphylaxis
Holly Monroe
Angina with Cardiac Arrest
Bruce Stevens
Anterior Myocardial Infarction
Steve Johnson
Asthmatic with Pneumothorax
Jason Riley
COPD Exacerbation with Respiratory Fail...
Paul Conti
COPD Patient
Grandma Smokey
Page 1 / 4
Open Library
New SCE...
Anaphylaxis
Holly Monroe
Print SCE
Add To Favorites
Age 21 years old
Gender Female
Weight 70.0 kg
Base Norma L. Female
Overview
Your rescue squad responds to a report of a 21-year-old female complaining of trouble breathing. She was eating dinner at a cookout when she noticed some tightness in her chest. The cook came by asking if anyone wanted another shrimp burger. She then told him she was allergic to shellfish. She was proceeding to her car to retrieve an epinephrine auto-injector when a wasp stung her.
This SCE consists of six states that manually transition.
During the initial assessment in State 1 Beginning Anaphylaxis, the patient presents with early signs of anaphylaxis, HR in the 90s, BP in the 100s/50s, RR in the 20s and SpO2 in the low 90s on room air. She remains conscious. The learner is expected to assess and manage the patient's airway, breathing and circulatory status (ABCs), identify early signs of allergic reaction, consider use of oxygen, call for help with interventions, consider early use of epinephrine and attach a cardiac monitor. If more than 120 seconds elapses without administration of epinephrine, the instructor should manually advance the SCE to State 2 Mild Anaphylaxis. If epinephrine is administered, the SCE is advanced to State 5 Epinephrine Administered.
In State 2 Mild Anaphylaxis, the patient experiences increased respiratory distress. The patient's HR is in the 110s.
Review
Run
About
User Guide
Support
meti admin

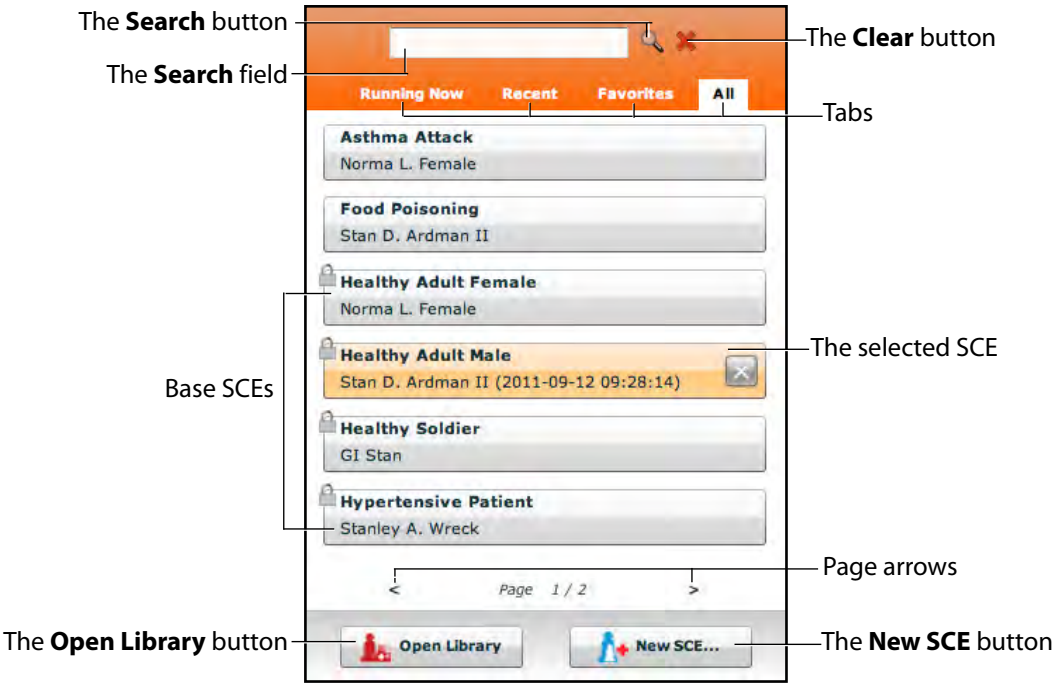
The Home Page

NOTE: To activate a fullscreen view in Internet Explorer, press F11 to toggle Internet Explorer's fullscreen mode.

The SCE Selection Panel

SCEs are process tools that enable the facilitator to execute a learning strategy using simulation. Preconfigured CAE Healthcare SCEs provide an extensive overview and outline of the learning exercise and require minimal additional faculty development time for use. Each SCE is comprised of a patient and up to four scenarios.

Available SCEs appear in the SCE Selection panel on the Home page.



The SCE Selection Panel

The SCE Selection panel has four tabs that access SCEs: Running Now, Recent, Favorites and All.

- **Running Now** tab: Lists the SCEs that are currently running and is only available when at least one SCE is running.
- **Recent** tab: Lists all the recently run or edited SCEs.
- **Favorites** tab: Lists all SCEs that have been selected as favorites and is only displayed after favorites have been selected. To add a favorite SCE to your profile, click the **Add to Favorites** button at the top of any SCE on the Home page. Managing favorites is achieved in the Account Profile portion of the software.
- **All** tab: Lists all SCEs, including user-created SCEs and all SCEs from available learning modules.

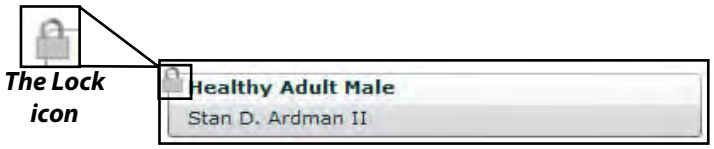
To search for an installed SCE, enter part of the name of an SCE in the **Search** field and click the **Search** button.

Click any SCE to select it. Once an SCE is selected, it appears in the SCE Summary panel.

To run an SCE, click **Run** in the SCE Summary panel to execute the SCE. A running SCE appears in orange with an X icon.

Base SCEs are created by CAE Healthcare and represent base patient physiology. Base SCEs have no associated scenarios and no physiological progressions.

The **Lock** icon indicates a locked SCE.



A Locked SCE

Locked SCEs are installed by CAE Healthcare and cannot be deleted. Base and preconfigured SCEs are locked.

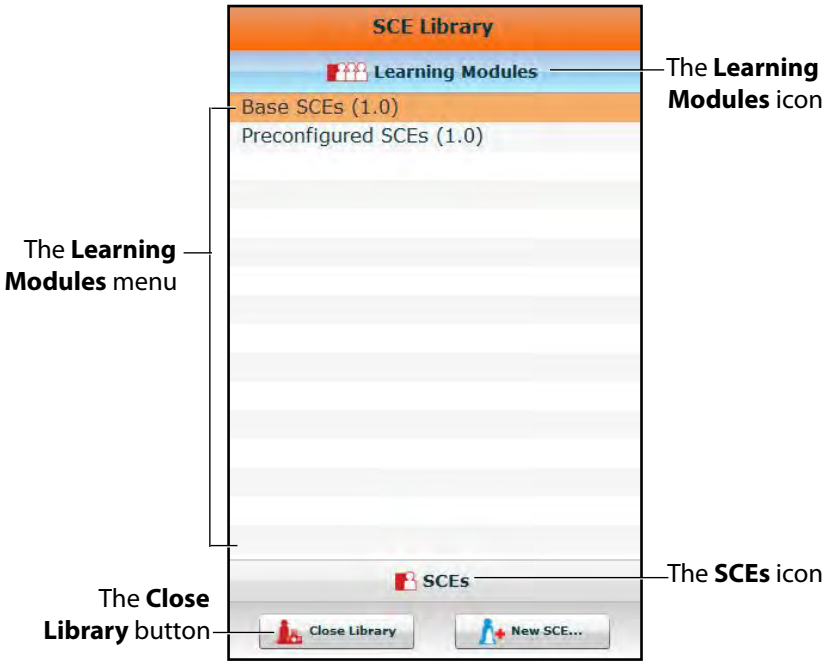
Click the page arrows to view additional pages of installed SCEs.

To open the SCE Library, click the **Open Library** button.

To create a new SCE, click the **New SCE** button.

The SCE Library

Access SCEs from your library by clicking the **Open Library** button at the bottom of the SCE Selection panel. The SCE Library appears.



The SCE Library

The Learning Modules menu is open by default. The Learning Modules menu lists Base SCEs, Preconfigured SCEs and all installed learning applications. Click the desired learning application name to access its SCEs, or click Base SCEs or Preconfigured SCEs. The selected SCEs appear.

Clicking the **SCEs** icon reveals the SCEs menu, which lists all user-created SCEs.

Clicking the **Learning Modules** icon again reveals the Learning Modules menu.

To open an SCE, click the name of the SCE.

Click **Close Library** to exit the SCE Library.

Base SCEs

Base SCEs are fundamental SCEs with no scenarios and no progression of events. Each base SCE is designed to provide facilitators with a baseline to run simulations "on the fly" or as a physiological baseline from which to design their own SCEs.

To access a base SCE from the SCE Library, choose **Learning Modules**, then click **Base SCEs**. The base SCEs are displayed and available for selection.

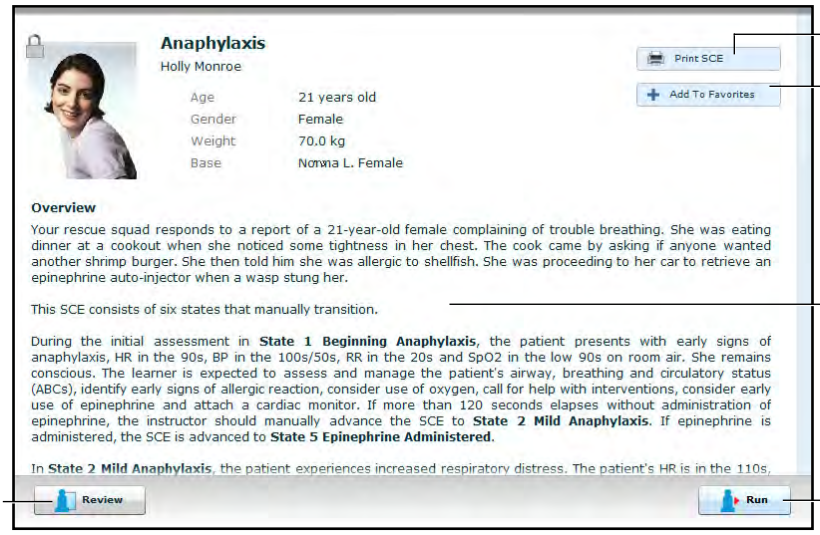
Preconfigured SCEs

Preconfigured SCEs are training tools with scenarios and multiple states. They are intended to be used for learner education and training.

To access a preconfigured SCE from the SCE Library, choose **Learning Modules**, then click the name of the SCE category. The SCEs in the chosen category are displayed and available for selection.

The SCE Summary Panel

The SCE Summary Panel provides information about the selected SCE.


Anaphylaxis
Holly Monroe
Print SCE
Add To Favorites
Age 21 years old
Gender Female
Weight 70.0 kg
Base Norma L. Female
Overview
Your rescue squad responds to a report of a 21-year-old female complaining of trouble breathing. She was eating dinner at a cookout when she noticed some tightness in her chest. The cook came by asking if anyone wanted another shrimp burger. She then told him she was allergic to shellfish. She was proceeding to her car to retrieve an epinephrine auto-injector when a wasp stung her.
This SCE consists of six states that manually transition.
During the initial assessment in State 1 Beginning Anaphylaxis, the patient presents with early signs of anaphylaxis, HR in the 90s, BP in the 100s/50s, RR in the 20s and SpO2 in the low 90s on room air. She remains conscious. The learner is expected to assess and manage the patient's airway, breathing and circulatory status (ABCs), identify early signs of allergic reaction, consider use of oxygen, call for help with interventions, consider early use of epinephrine and attach a cardiac monitor. If more than 120 seconds elapses without administration of epinephrine, the instructor should manually advance the SCE to State 2 Mild Anaphylaxis. If epinephrine is administered, the SCE is advanced to State 5 Epinephrine Administered.
In State 2 Mild Anaphylaxis, the patient experiences increased respiratory distress. The patient's HR is in the 110s,
Review
Run
The Print button
The Add to Favorites button
The SCE Content Summary
The Review button
The Run button

The SCE Summary Panel

The **Print SCE** button can be used to generate a printable PDF of the selected SCE.

The **Add to Favorites** button adds the SCE to your Favorites list.

Clicking the **Review** button accesses the SCE Editor, which can be used to review and edit SCEs.

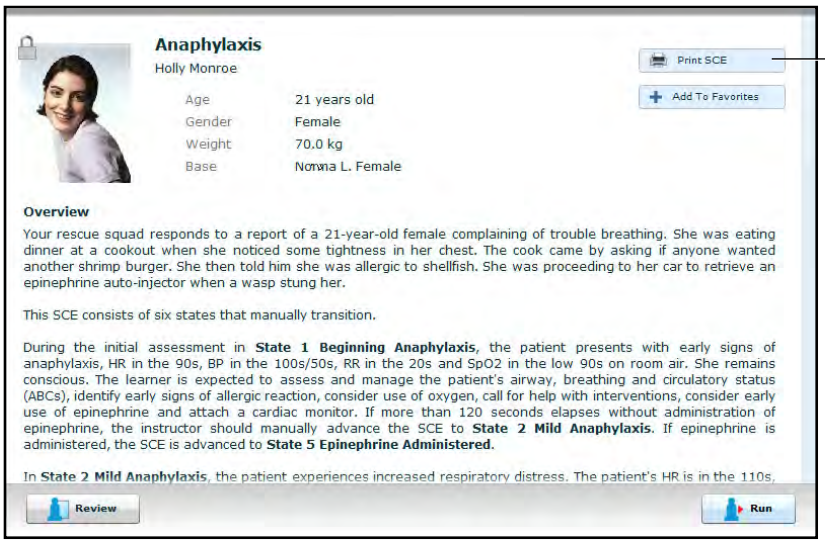
Select the **Run** button to run the SCE.

Printing SCEs

To print an SCE:

1. From the Home page, select the SCE to print.

   The SCE summary panel appears.


Anaphylaxis
Holly Monroe
Print SCE
Add To Favorites
Age 21 years old
Gender Female
Weight 70.0 kg
Base Norma L. Female
Overview
Your rescue squad responds to a report of a 21-year-old female complaining of trouble breathing. She was eating dinner at a cookout when she noticed some tightness in her chest. The cook came by asking if anyone wanted another shrimp burger. She then told him she was allergic to shellfish. She was proceeding to her car to retrieve an epinephrine auto-injector when a wasp stung her.
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In State 2 Mild Anaphylaxis, the patient experiences increased respiratory distress. The patient's HR is in the 110s,
Review
Run
The Print SCE button

The SCE Summary Panel

2. From the SCE summary panel, click the **Print SCE** button.

   A PDF of the selected SCE appears in a new browser window.

3. Save the PDF to an external storage device to print from another computer,

   OR

   To print from the Instructor Workstation, consult your network administrator for assistance connecting to a printer.

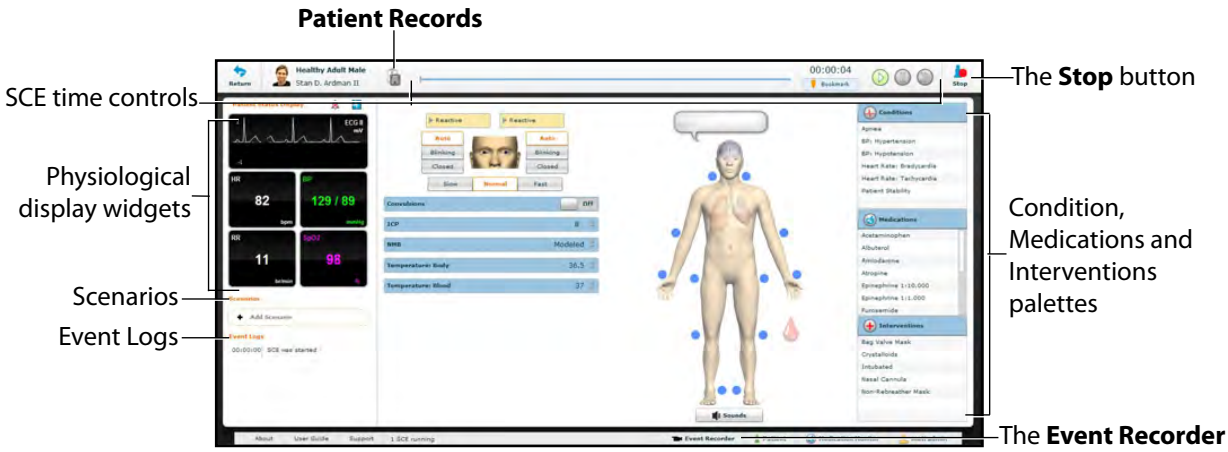
4. When finished saving or printing the PDF, close the browser window containing the PDF to return to Müse.

Running an SCE

To run an SCE, from the Home screen, select an SCE and click the **Run** button. The Run screen can also be accessed from the Scenario Designer or SCE Editor by clicking the **Run** button near the top of the screen.

The Run Button

The Run screen appears.

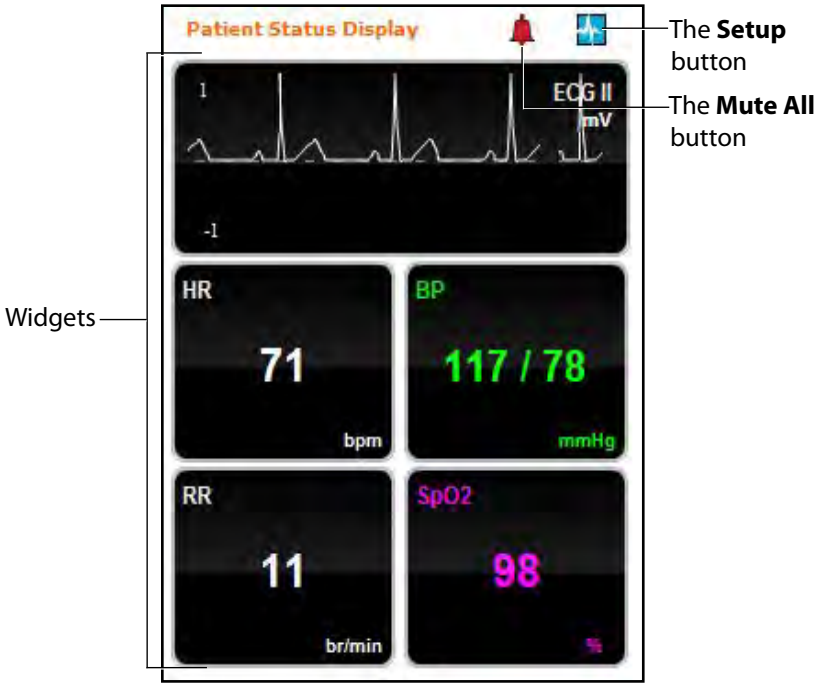


The Run Screen

From the Run screen, users can manage the SCE, perform interventions, view physiological status and events, save events as states, save the Patient and associate records with the Patient.

Using the Patient Status Display

On the Run screen, there are widgets that display the patient's physiological status. The **Patient Status Display** widgets can be changed to reflect the user's needs. There are six available display spaces for the widgets. Waveform widgets utilize two display spaces.

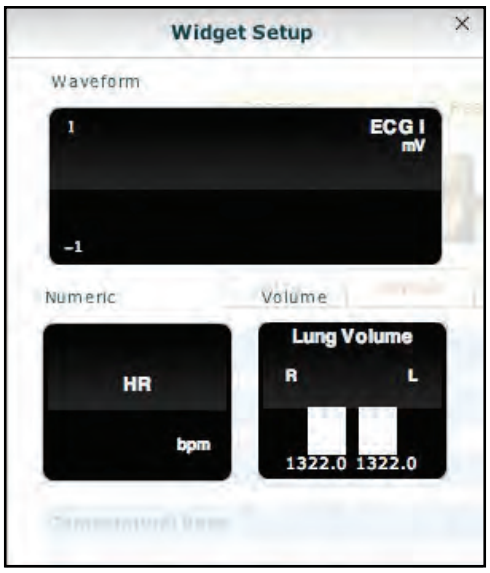


The Patient Status Display Widgets

Use the **Mute All** button to mute all Patient Status Display alarms.

To adjust the widget layout, click the **Setup** button.

The Widget Setup menu opens, displaying available widget types: Waveform, Numeric and Volume.



The Widget Setup Menu

Adjust the Patient Status Display layout by dragging a widget type from the Widget Setup Menu and dropping it over the Patient Status Display. The new widget type replaces the old.

To change a **Patient Status Display** widget, click the widget to be changed. A list of available parameters appears.

Choose the desired option from the list and the widget changes to reflect the new selection.

From the numeric widget menu, you can also use the **Set Color** button to change the display color of the widget and the **Set Alarm** button to change the alarm settings for the selected widget.

The Event Logs

During an SCE, all software operations sensed by the simulator or entered manually (e.g., virtual defibrillation) are recorded by an event entry that appears on the screen. The event entry notes what occurred and the time it happened.

The Event Logs

Event Logs can also be exported. For more information, see *History on page 112*.

Displaying Patient Records

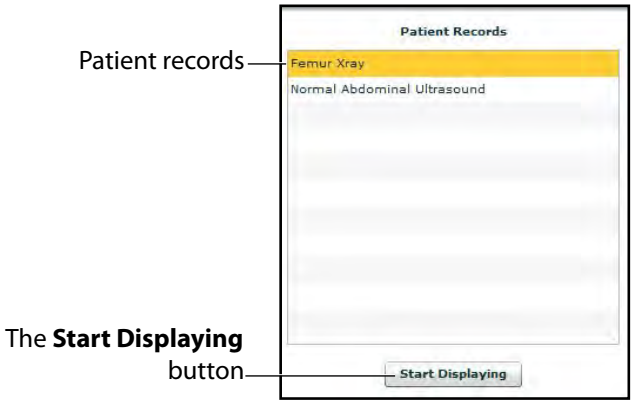
Patient records can be uploaded to Müse and displayed in the TouchPro software while an SCE is running.

To display an uploaded patient record:

1. From the Müse Run screen, click the **Patient Records** button.

The Patient Records Button

The Patient Records list appears, displaying all available patient records.



The Patient Records List

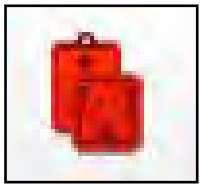
2. Select a patient record from the list.
3. Click **Start Displaying**.

   The patient record is shown in a new TouchPro web browser window.

   IMPORTANT: Ensure pop-up blocking is turned OFF in the web browser of the Instructor Workstation and any TouchPro workstations. Consult the web browser's help menu for assistance.

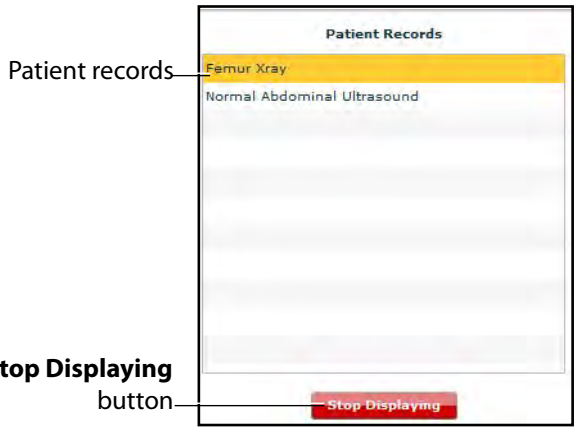
   NOTE: The web browser window containing the patient record may be minimized initially. If the window is not readily visible, click the web browser icon on the Dock (Macintosh Instructor Workstation) or Taskbar (Windows Instructor Workstation) to locate the new window.

   The **Patient Records** button turns red, indicating that a patient record is being displayed.



The Patient Records Button

The **Start Displaying** button at the bottom of the Patient Records list changes to a red **Stop Displaying** button.



The Patient Records List

To stop displaying a patient record, click **Stop Displaying** at the bottom of the Patient Records list.

To close the Patient Records list, click the **Patient Records** button. The list closes. If a patient record is being displayed, the **Patient Record** button remains red until the list is re-opened and **Stop Displaying** is chosen.

NOTE: Only one patient record can be displayed at a time.

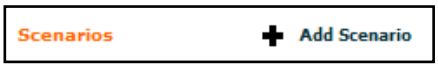
For information about uploading patient records to Müse for selection from the Run screen, see *Patient Records on page 119*.

Adding a Scenario to a Running SCE

SCEs incorporate scenarios that contain pre-programmed physiology. Scenarios can be added to SCEs to enhance patient physiology.

To add a scenario to an SCE that is running:

1. Click the **Add Scenario** button on the Run screen



The Add Scenario Button

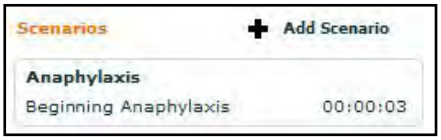
   The Choose Scenario dialog box appears.

2. Select a scenario from the Choose Scenario Dialog Box.

   The **Search** field can be used to search for a scenario to select.

3. Click **Add**.

   The scenario is added to the SCE and appears under the **Scenarios** heading on the Run screen.



An Added Scenario

Changing Physiology

The patient physiology can be adjusted while an SCE is running in two ways: by using one of the physiological views on the Run screen to modify parameters or by using the Conditions, Interventions and Medications palettes.

Using the Physiological Views

From the Run screen, users can select from five different views representative of various body systems and features:

Neurological

Respiratory

Cardiovascular

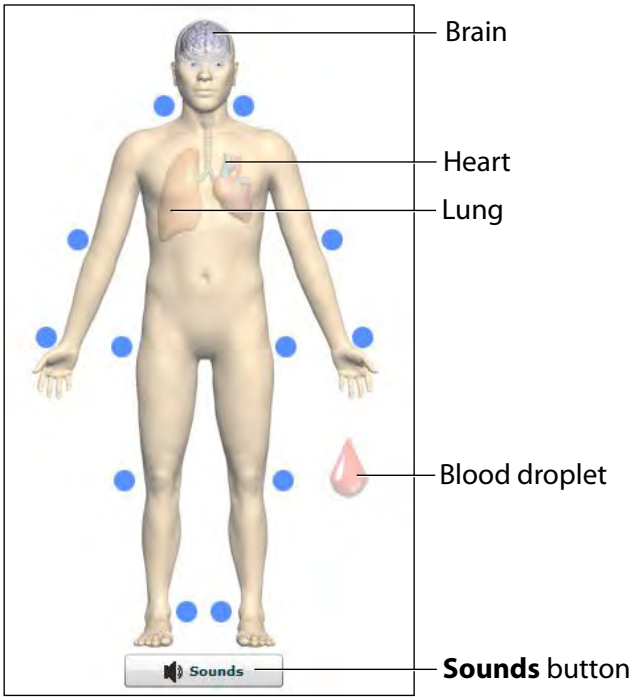
Fluids

Sounds

To access each view, click the appropriate organ, icon or button.

- For Neurological, click the brain.
- For Respiratory, click the lung .
- For Cardiovascular, click the heart.
- For Fluids, click the droplet of blood.
- For Sounds, click the **Sounds** button.

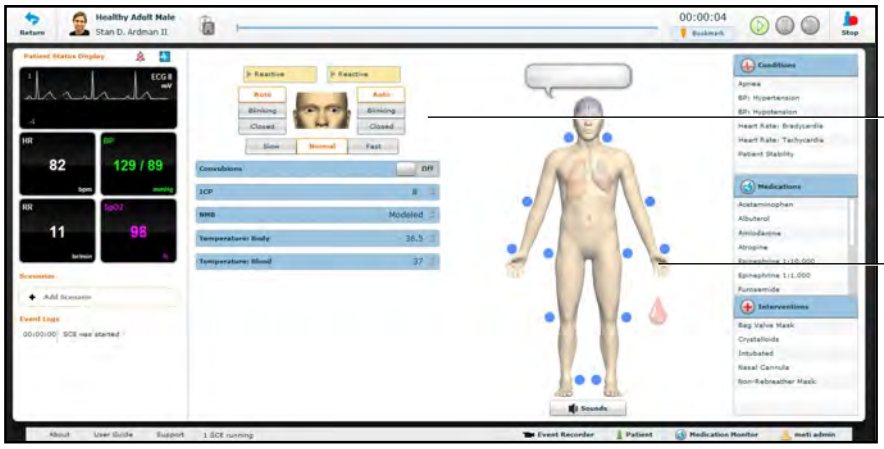
From each view, various parameters can be viewed and adjusted.



The Physiological Views

To change a patient's physiology using the physiological view:

1. Click the appropriate organ, icon or button from the homunculus to select the appropriate physiological view.



The Run Screen

The associated parameters appear to the left of the homunculus.

2. Locate the desired parameter.
3. Select the parameter and set the new value.

   Parameters have varying controls, such as sliders, switches and menus. In the image below, the Heart Rate parameter is shown. Within the Heart Rate parameter, there are switches that toggle between **Modeled** and **Override** and **Seconds** and **Minutes**, a slider that sets the beats per minute and it's an available field where the beats per minute value can be keyed in.

The Heart Rate Parameter

Once the parameter has been set, it is reflected in the patient's physiology.

Types of Parameters

There are two types of parameters: numeric and discrete.

Once a parameter is selected and set, the patient's physiology changes according to the model for that parameter.

Numeric Parameters

Numeric parameters set either a measured value (e.g., 20 mL) or a multiplied value called a factor (e.g., Heart Rate Factor 2.0 is two times the baseline Heart Rate).

Numeric parameters are changed by clicking in the relevant field and entering a new value in place of the existing one or using a slider to move through the range of parameter values until the desired numeric value is established.

Once a measured value is set, that value overrides the physiologically modeled parameter value. To return to a physiologically modeled value, switch the slider in the parameter dialog from **Override** to **Modeled**.

Discrete Parameters

Discrete parameters enable users to select one of two or more options.

Discrete parameters are changed by choosing the appropriate option using a drop-down menu or toggle switch.

In the image below, the Needle Decompression parameter is shown. The Needle Decompression parameter is set using a discrete parameter switch that toggles between **Off** and **On**.

The Needle Decompression Switch

Once the parameter has been set, it is reflected in the patient's physiology.

NOTE: Not all changes to parameters affect the patient's physiology, but all are logged.

Using the Conditions, Medications and Interventions Palettes

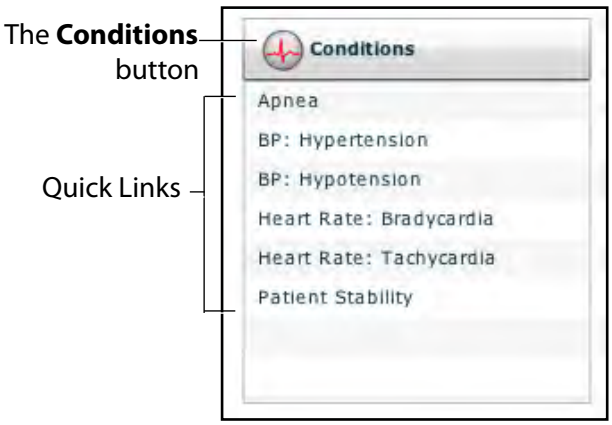
The Conditions, Medications and Interventions palettes on the Run screen enable the application of conditions, medications and interventions during simulation. Once applied, conditions are reflected in the patient's physiology and logged. All medications and interventions are also logged, and most affect the patient's physiology.

Using the Conditions Palette

Conditions are preprogrammed pathophysiological states that use one or more physiological parameters and are designed to enable you to create physiological changes on the fly.

There are two ways to apply conditions using the Conditions palette: using a Quick Link or using the complete Conditions menu. Quick Links are preconfigured conditions that are made accessible in the Conditions palette for quick application. Quick Links can also be created for the **Medications** and **Interventions** palettes.

To set parameters using the Quick Links in the **Conditions** palette, click one of the Quick Links. The condition is applied and affects the patient's physiology.



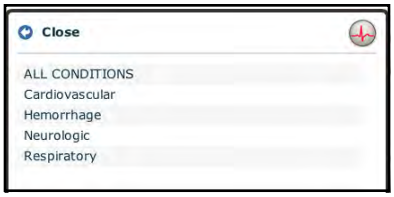
The Conditions Palette

NOTE: Quick Links can only be added while creating or editing an SCE.

Or, to apply a condition that is not set up as a Quick Link in the **Conditions** palette:

1. Click the **Conditions** button.

   The Conditions menu appears. Conditions are organized by system, or all available conditions are listed under **ALL CONDITIONS**.



The Conditions Menu

2. Navigate the menus to find the desired condition.

   Once the desired condition has been located, click the condition's name from the list.

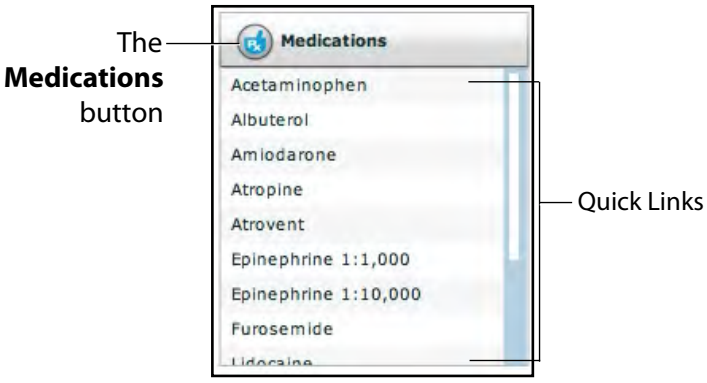
   The condition is applied and affects the patient's physiology.

Using the Medications Palette

There are two ways to administer medications using the **Medications** palette: using a Quick Link or using the **Medications** menu. Quick Links are preconfigured medications that are made accessible in the **Medications** palette for quick application. Quick Links can also be created for the **Conditions** and **Interventions** palettes.

To set parameters using the Quick Links in the **Medications** palette, click a Quick Link. The medication is applied and appears in the patient's physiology.

NOTE: Not all medications affect the patient's physiology, but all are logged.



The Medications Palette

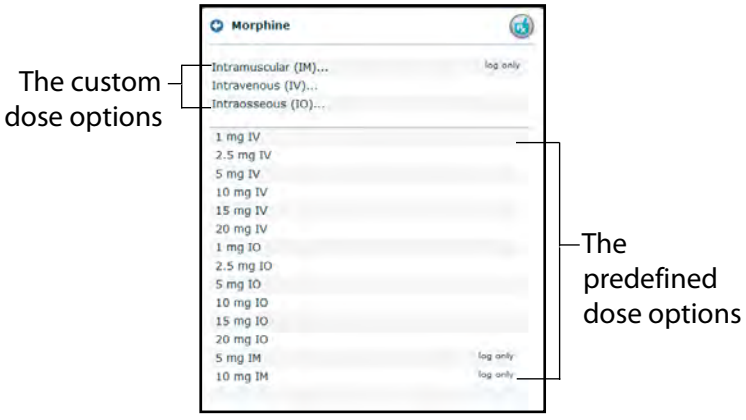
NOTE: Quick Links can only be added while creating or editing an SCE.

Or, to apply a medication that is not set up as a Quick Link in the **Medications** palette:

1. Click the **Medications** button. Medications are organized by type, and all available medications are listed under **ALL MEDICATIONS**.
2. Navigate through the menus to locate the desired medication.
3. Once the medication has been located, click the medication's name from the list.

The All Medications Menu

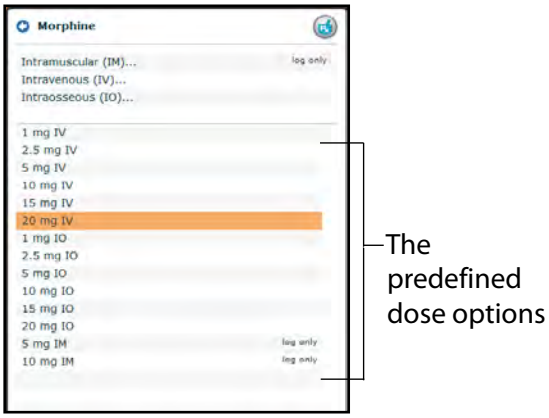
The Medication Dose menu appears, displaying the pre-defined does and custom does routes for the chosen medication.



The Medication Dose Menu

4. Select a dose option. This can be done one of two ways:

   a. Choose a pre-defined dose.

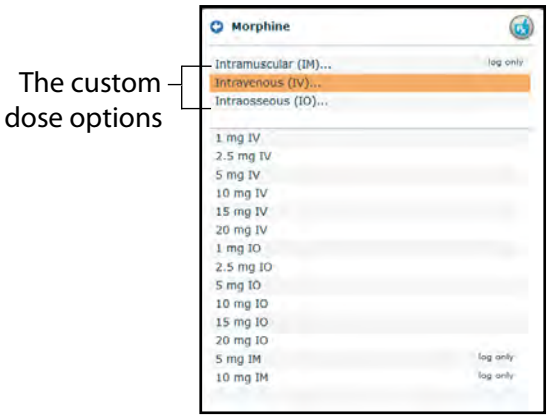


The Medication Dose Menu

   The dose is applied and appears in the patient's physiology.

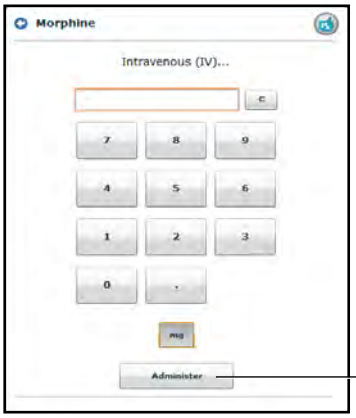
   OR,

   b. Choose a route of administration to administer a custom dose.



The Medication Dose Menu

The Custom Dose Administration menu appears.



The Custom Dose Administration Menu

5. Enter the desired dose and click the **Administer** button.

   The dose is applied and appears in the patient's physiology.

   NOTE: Not all medications affect the patient's physiology, but all are logged.

Using the Interventions Palette

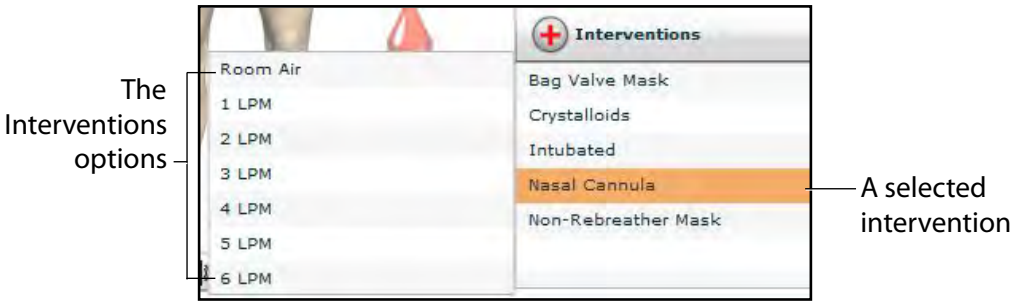
There are two ways to perform and/or administer interventions using the Interventions palette: using a Quick Link or using the complete **Interventions** menu. Quick Links are preconfigured interventions that are made accessible in the **Interventions** palette for quick application. Quick Links can also be created for the **Conditions** and **Medications** palettes.

To apply an intervention using the Quick Links in the **Intervention** palette, click an Intervention Quick Link.

NOTE: Not all interventions affect the patient's physiology, but all are logged.

The Interventions Palette

Once an Intervention is selected, a menu appears with available options for the selected Intervention. Click the desired option to select it. The intervention is applied and appears in the patient's physiology.



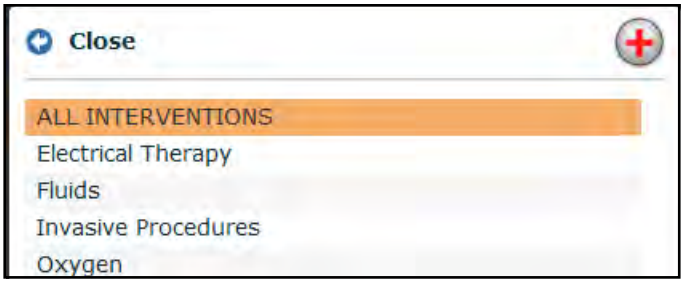
The Selected Intervention Options

NOTE: Quick Links can only be added while creating or editing the SCE.

Or, to apply an intervention that is not set up as a Quick Link in the **Interventions** palette:

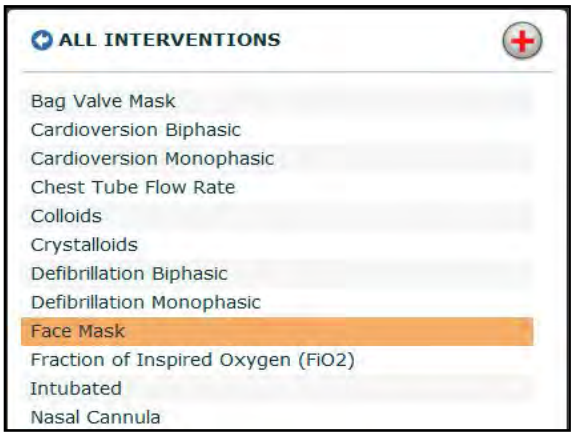
1. Click the **Interventions** button.

   The Interventions menu appears. Interventions are organized by type, or all available interventions are listed under **ALL INTERVENTIONS**.



The All Interventions Menu

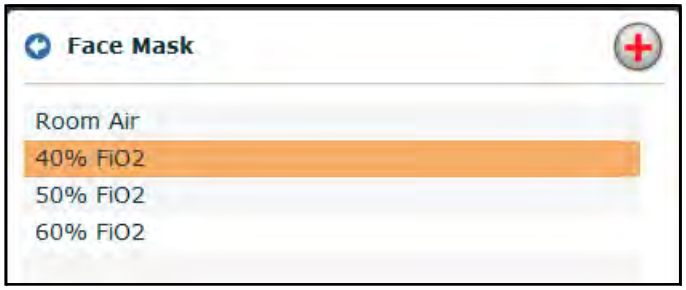
2. Navigate through the menus to find the desired intervention.
3. Once the desired intervention has been located, click the intervention's name from the list.



The All Interventions Menu

   The Intervention Options menu appears, showing the available options for the selected intervention.

4. Click the desired option.



The Intervention Options

The intervention is applied and appears in the patient's physiology.

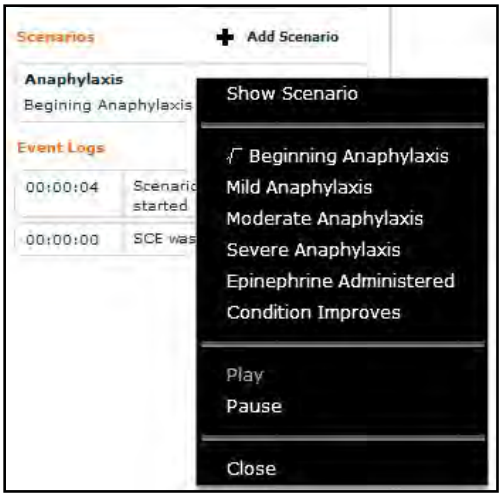
Transitioning Scenario States from the Run Screen

To move between scenario states from the Run screen:

1. Click the desired scenario.

A Scenario

The Scenario Management pop-up menu appears, and all available states are listed.



The Scenario Management Pop-Up Menu

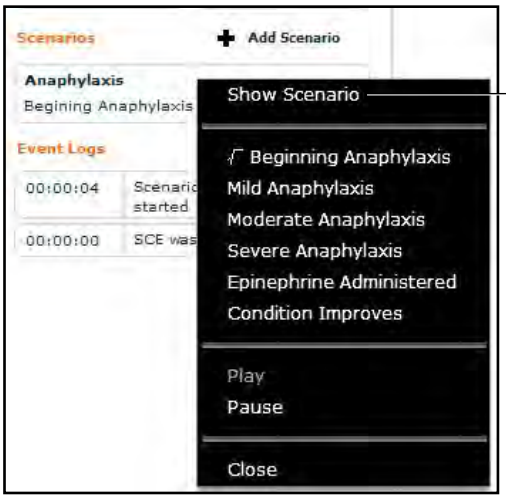
2. Select the desired state. The scenario proceeds to the selected state.

   The scenario can also be paused or continued by selecting the **Pause** and **Play** options from the Scenario Management Pop-Up menu.

Transitioning Scenario States from the Scenario Screen

To move between scenario states from the Scenario Screen:

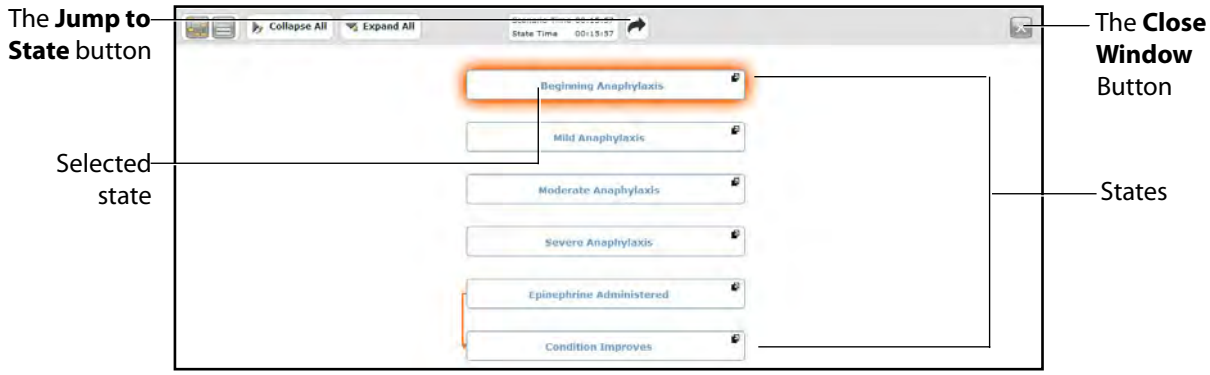
1. From the Run screen, click the desired loaded scenario. The Scenario Management pop-up menu appears.



The Scenario Management Pop-Up Menu

2. From the menu, select **Show Scenario**.

   The Scenario screen appears, displaying the scenario.

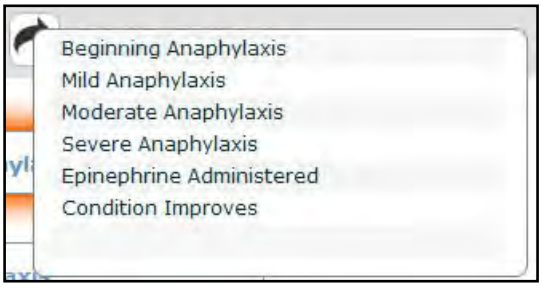


The Scenario Screen

At the top of this screen, the Scenario Time and State Time are visible. Additionally, users can pause and continue playing the scenario by clicking the **Pause** and **Play** buttons on the Scenario Management pop-up menu, which is still visible on the left side of the screen.

3. Click the **Jump to State** button.

   The Jump to State menu appears, displaying the available states.



The Jump to State Menu

4. Select the desired state.

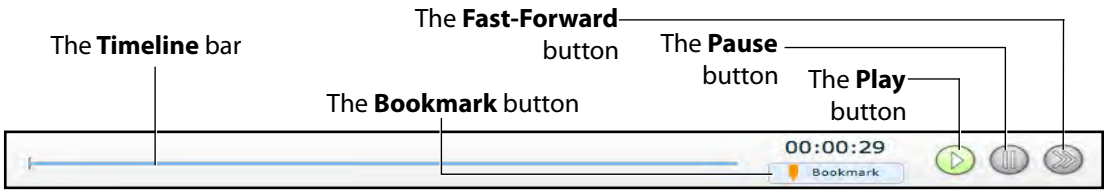
   The scenario transitions to the selected state and the state is highlighted on the Scenario screen.

   NOTE: Double-click on the states to expand to the full view.

5. Click the **Close Window** button to return to the Run screen.

SCE Time Controls

The SCE time controls are located at the top of the Run screen.



The SCE Time Controls

The **Timeline** bar shows the amount of time that has elapsed and bookmarks that have been created.

The **Bookmark** button creates a bookmark at the current point in the SCE. The bookmark can be used later to return to this point in the SCE, resetting the patient's physiology to what it was when the bookmark was created.

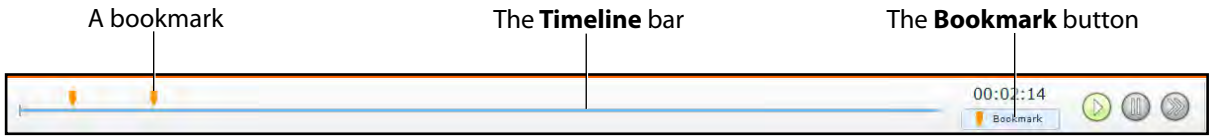
The **Play** button starts the SCE if it has been paused.

The **Pause** button pauses the SCE time.

The **Fast-Forward** button accelerates the SCE time at a 4:1 ratio.

Using Bookmarks

To create a bookmark, click the **Bookmark** button. An orange bookmark appears on the **Timeline** bar.

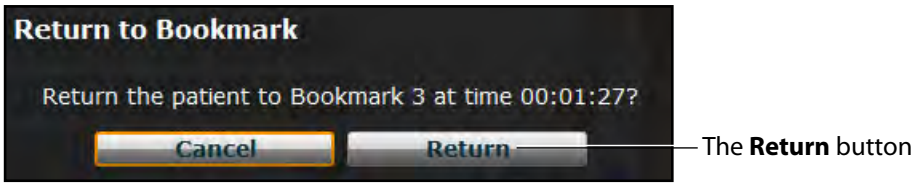


The SCE Time Controls

To return to a bookmarked time in the SCE:

1. Click the orange bookmark on the timeline.

   The Return to Bookmark message appears.



The Return to Bookmark Message

2. Click **Return**.

   The SCE returns the selected point in the timeline.

   NOTE: The SCE time continues moving forward and does not reset to the bookmarked time.

Using the Event Recorder to Save States

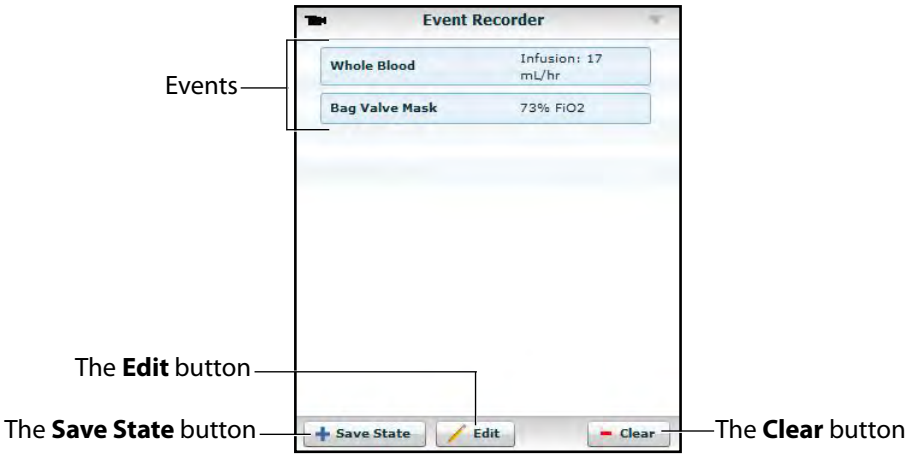
The Event Recorder can be used to save conditions, interventions and parameter changes as states.

To save a state using the Event Recorder:

1. Apply the desired conditions, interventions and parameters.
2. Click the **Event Recorder** button at the bottom of the Müse screen.

The Event Recorder Button

The Event Recorder appears, displaying all events that have occurred since the start of the SCE.



The Event Recorder

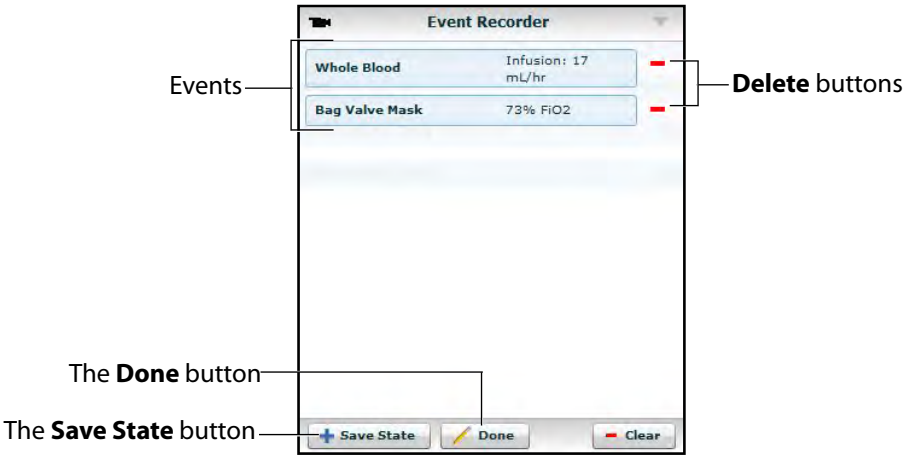
WARNING: The **Clear** button deletes all recorded events. This action cannot be undone.

3. Review the list of events.

   If you wish to remove any events from the state to be saved:

   a. Click **Edit**.

      A **Delete** button appears next to each recorded event.



The Event Recorder

b. Click the **Delete** button next to each event to be removed.

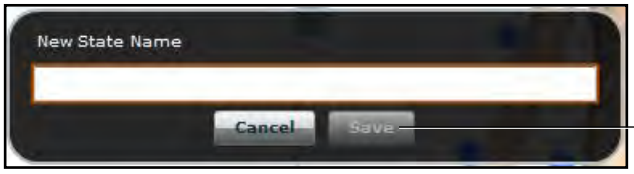
The events are removed from the Event Recorder.

c. Click **Done**.

The **Delete** buttons are hidden.

4. Click **Save State**.

The New State Name window appears.



The New State Name Window

5. Enter a state name.
6. Click **Save**.

The state is saved to the State Library and can be accessed via the Scenario Designer.

For more information about the State Library, see *Saving States to the State Library on page 109*.

Creating a New Patient

When an additional patient with specific physiological characteristics is needed for repeated use, a new patient can be created from the Run screen.

To create a new Patient:

1. From the Home page, run an SCE that has a Patient with the same gender as the Patient to be created.
2. From the Run screen, apply the desired conditions and set the necessary parameters.
3. Once complete, click the **Patient** button at the bottom of the Run screen.

The Patient Button

The Patient pop-up menu appears.

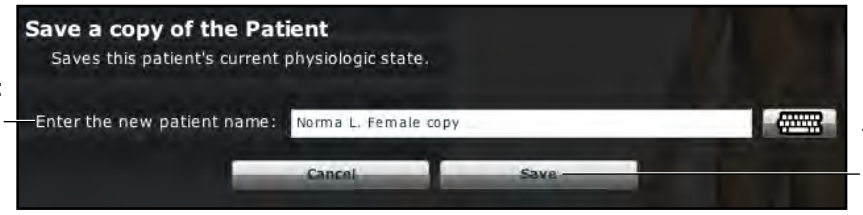
The **Save** button

The Patient Pop-Up Menu

4. Click **Save**.

   The Save a copy of the Patient dialog box appears.

The **Enter the new patient name** field



The **Save** button

The Save a Copy of the Patient Dialog Box

5. Enter a name for the new Patient in the **Enter the new patient name** field.
6. Click **Save**.

   The new Patient is saved and available for selection from the Base Patients Library when creating a new SCE.

Resetting a Patient

Resetting a Patient brings the Patient back to its original physiological state before any scenarios were applied or modifications were made. Any running scenarios are paused. However, the SCE time is unaffected. Additionally, the reset appears in the Event Logs.

NOTE: If baseline physiology settings have been selected, they are removed when the Patient is reset.

To reset a Patient:

1. While running an SCE, click **Patient** at the bottom of the Run screen.

The Patient Button

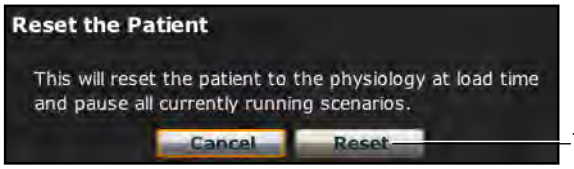
The Patient pop-up menu appears.

The **Reset** button

The Patient Pop-Up Menu

2. Click **Reset**.

The Reset the Patient dialog box appears, stating that the patient's physiology will be reset to its state at load time and all running scenarios will be paused.


Reset the Patient
This will reset the patient to the physiology at load time and pause all currently running scenarios.
Cancel
Reset

The **Reset** button

The Reset the Patient Dialog Box

3. Click **Reset**. The Patient returns to its original physiological state at the start of the SCE.
4. To resume any paused scenarios, click the loaded scenario on the left side of the screen.

   The Scenario Management pop-up menu appears.
5. From the Scenario Management pop-up menu, select **Play**.

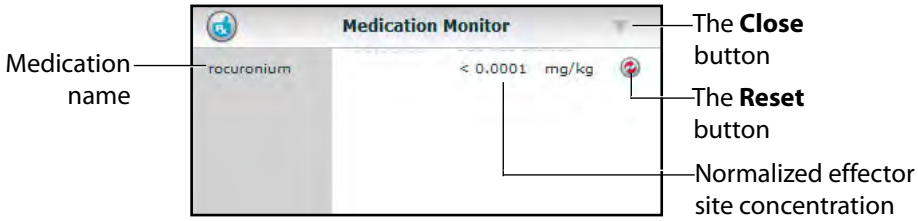
   The scenario is resumed.

The Medication Monitor

The Medication Monitor tracks the infusion of medication administered. To activate the Medication Monitor, from the Run screen, click the **Medication Monitor** button in the bottom, right portion of the screen.

The Medication Monitor Button

The Medication Monitor appears as a movable box on the Run screen.



The Medication Monitor

The normalized effector site concentration is shown next to each medication listing.

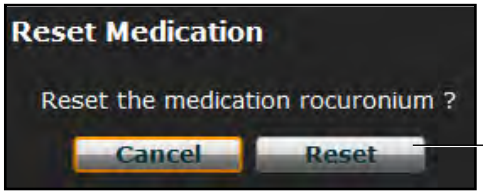
The **Reset** button is used to clear a medication from the physiological model and the Medication Monitor.

To close the Medication Monitor, press the **Close** button in the upper right corner of the medication Monitor window.

Resetting a Medication

To reset a medication from the Medication Monitor, click the **Reset** button on the Medication Monitor.

The Reset Medication dialog box appears, asking you to confirm that you wish to reset the medication.



The Reset Medication Dialog Box

The medication is cleared from the model and from the Medication Monitor.

With continuous infusions, the amount infused goes back to zero, but the infusion continues. To stop the infusion, you must select the medication from the medication library and set the infusion rate to zero.

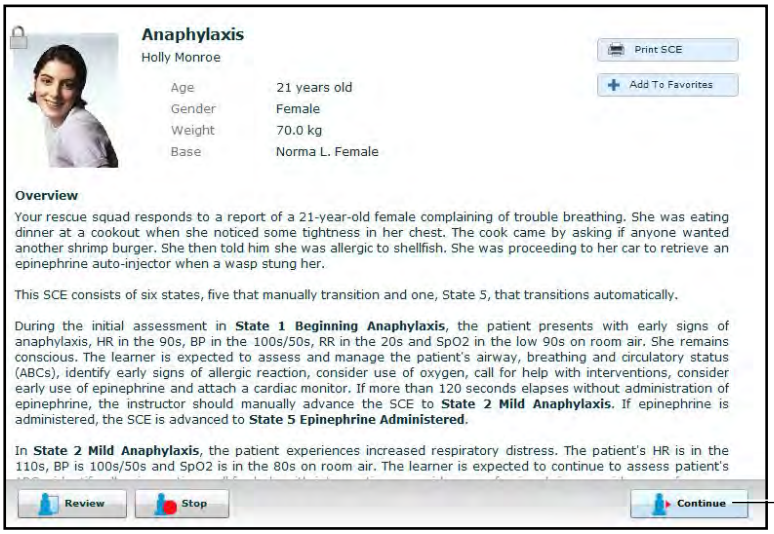
Returning to the Home Page

To exit the SCE and return to the Home page, click the **Return** button.

The Return Button

The SCE continues running and the Home page appears.

To return to the SCE from the Home page, click the **Continue** button in the SCE summary panel of the running SCE.


Anaphylaxis
Holly Monroe
Print SCE
Add To Favorites
Age 21 years old
Gender Female
Weight 70.0 kg
Base Norma L. Female
Overview
Your rescue squad responds to a report of a 21-year-old female complaining of trouble breathing. She was eating dinner at a cookout when she noticed some tightness in her chest. The cook came by asking if anyone wanted another shrimp burger. She then told him she was allergic to shellfish. She was proceeding to her car to retrieve an epinephrine auto-injector when a wasp stung her.
This SCE consists of six states, five that manually transition and one, State 5, that transitions automatically.
During the initial assessment in State 1 Beginning Anaphylaxis, the patient presents with early signs of anaphylaxis, HR in the 90s, BP in the 100s/50s, RR in the 20s and SpO2 in the low 90s on room air. She remains conscious. The learner is expected to assess and manage the patient's airway, breathing and circulatory status (ABCs), identify early signs of allergic reaction, consider use of oxygen, call for help with interventions, consider early use of epinephrine and attach a cardiac monitor. If more than 120 seconds elapses without administration of epinephrine, the instructor should manually advance the SCE to State 2 Mild Anaphylaxis. If epinephrine is administered, the SCE is advanced to State 5 Epinephrine Administered.
In State 2 Mild Anaphylaxis, the patient experiences increased respiratory distress. The patient's HR is in the 110s, BP is 100s/50s and SpO2 is in the 80s on room air. The learner is expected to continue to assess patient's
Review
Stop
Continue
The Continue button

The SCE Summary Panel

Stopping the SCE

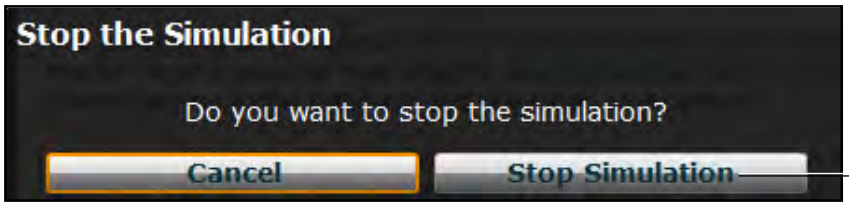
Running SCEs can be stopped from the Run screen or the Home page.

To stop an SCE from the Run screen:

1. Click **Stop** in the upper right corner of the screen.

The Stop Button

The Stop the Simulation dialog box appears.



The Stop The Simulation Dialog Box

2. Click **Stop Simulation**.

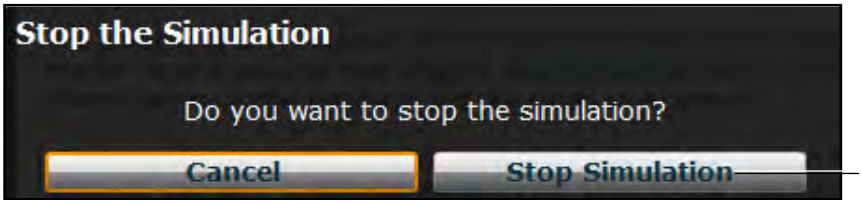
   The SCE stops running and the Müse Home page is shown.

To stop an SCE from the Home page:

1. Click the **Stop** button in the bottom left corner of the SCE Summary Panel.

The Stop Button

The Stop the Simulation dialog box appears.



The Stop The Simulation Dialog Box

2. Click **Stop Simulation**.

   The SCE stops running.

IMPORTANT: Always stop all running SCEs before logging out of Müse.

Developing SCEs

Creating and editing SCEs are similar processes. Once an SCE is created, the steps for modifying the SCE are the same as those for editing a previously-created SCE. The processes of creating and editing SCEs each begin with a unique button on the Home screen.

Use the **New SCE** button to create a new SCE.

The New SCE Button

The minimal requirements for creating a new SCE include selecting a Patient, naming the SCE and saving the SCE. Once the new SCE is created, you can continue with the SCE development or edit it later.

Use the **Review** button to edit an existing SCE.

The Review Button

Creating a New SCE

Creating an SCE requires naming the SCE and selecting a Base Patient.

To create a new SCE:

1. From the Home screen, click **New SCE**.

The New SCE Button

The Patients Palette appears.

The Patients Palette

2. Select a patient from the palette and click **Create**.

   The SCE Editor appears, showing the Enter a name for the SCE dialog box.

The SCE Editor Screen

3. Enter the name for the SCE.

   NOTE: The name of the SCE may NOT exceed 80 characters. Additionally, SCE file names CANNOT contain any special characters, such as / \ : * ? < > % | “

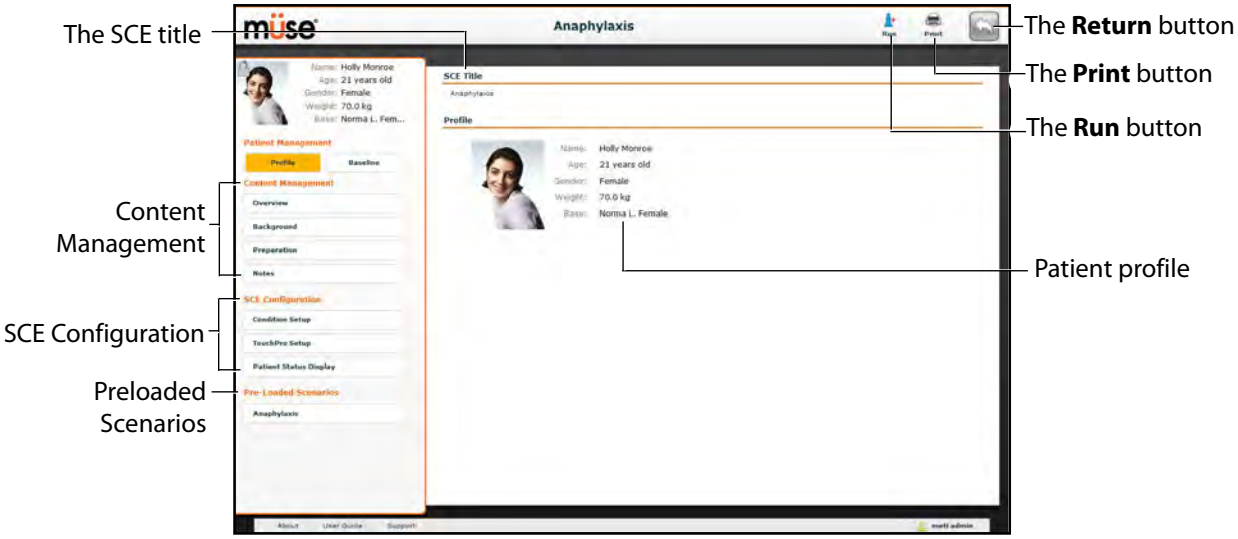
4. Click **Save**.

   Once the SCE is saved, it is stored and can be edited and reviewed at any time, including creating a Patient Profile and content, determining settings and programming scenarios.

The SCE Editor

The SCE Editor can be used to review preconfigured SCEs and to create or edit custom SCEs.

To access the SCE Editor, click the **Review** button in the SCE Summary Panel or create a new SCE.



The SCE Editor

The buttons in the upper right corner of the SCE Editor provide options for running the SCE, generating a printable PDF of the SCE or returning to the Home page.

The **Content Management**, **SCE Configuration** and **Preloaded Scenario** links in the left panel are used to review the SCE content and configuration and to view scenarios applied to the SCE.

Editing a Patient's Profile

To edit the Patient Profile:

1. From the SCE Editor, in the **Profile** section, click **Edit**.

The SCE Editor Screen

The Profile Editor appears.

The Profile Editor

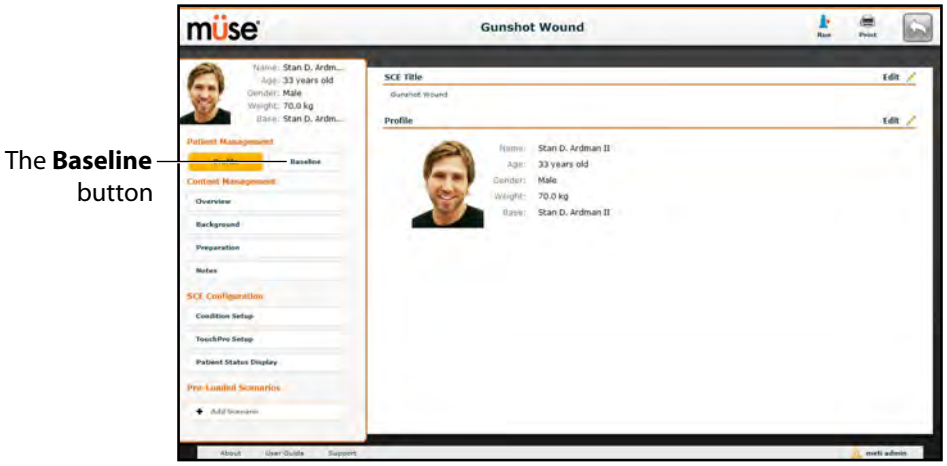
2. Set the Patient's name, age, gender and weight by filling in the appropriate fields.
3. Click the **Change Picture** button to change the patient's picture (optional).
4. Click **Save**.

   IMPORTANT: No part of the patient's profile can contain any special characters, such as / \ : * ? < > % | "

Setting a Patient's Baseline

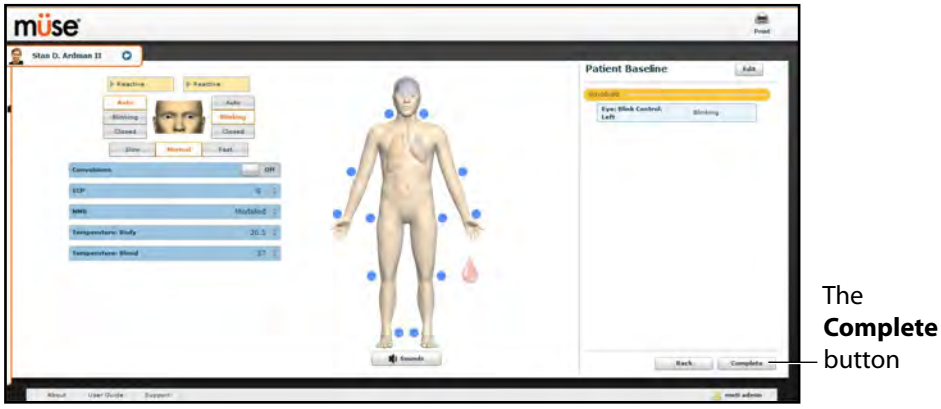
To set the Patient's Baseline:

1. From the SCE Editor, click **Baseline**.



The SCE Editor Screen

The Patient Baseline screen appears.



The Patient Baseline Screen

2. Set the Patient's baseline physiology by modifying the desired parameters.
3. Click **Complete**.

   When the SCE begins, the Patient presents with the selected baseline settings.

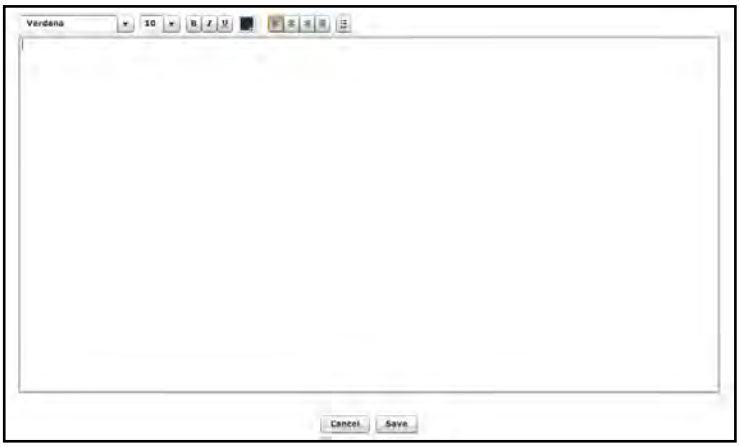
Content Management

SCE Content is entered from the SCE Editor using the **Overview**, **Background**, **Preparation** and **Notes** buttons under the **Content Management** heading.

The Content Management Buttons

Each button accesses a screen that allows users to enter information for the chosen section (Overview, Background, Preparation or Notes). Click the **Edit** button of each section on the SCE Editor to access a rich-text editor that enables data entry.

IMPORTANT: Text can be copied and pasted into the fields from TextEdit or Notepad only.



The Rich-Text Editor

Click **Save** when all data for the field has been entered.

SCE Configuration

Setting up the Conditions, the TouchPro software and the Patient Status Display is achieved by clicking the buttons under the **SCE Configuration** heading in the SCE Editor.

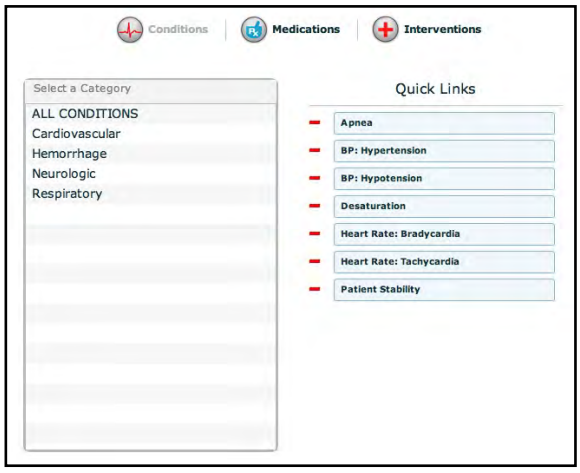
The SCE Configuration Buttons

Condition Setup Screen and Creating Quick Links

Click **Condition Setup** to access the Condition Setup screen. From the Condition Setup screen, conditions, medications and interventions can be preconfigured for the SCE creating Quick Links.

On the Condition Setup screen, **Conditions**, **Medications** and **Interventions** buttons are available. To navigate through available conditions and interventions, click the **Conditions, Medications** and **Interventions** buttons.

The Conditions Setup screen appears.



The Condition Setup Screen

To create a Quick Link, drag and drop the desired choice(s) from the Conditions, Medications or Interventions palette to the list of Quick Links.

Click the minus sign to remove a Quick Link from the SCE.

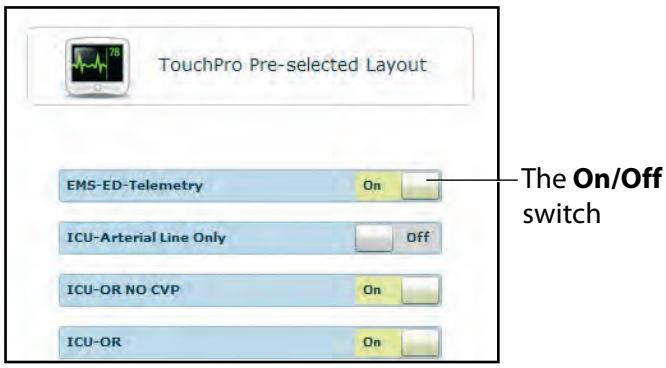
Modifying the TouchPro Setup

Use the **TouchPro Setup** link to access the TouchPro Setup panel.

From the TouchPro Setup panel, TouchPro layouts can be enabled or disabled for the selected SCE.

When a layout is enabled, it is available to be used in the TouchPro software with the selected SCE. When a layout is disabled, it is unavailable to be used in the TouchPro software with this SCE.

Click the **On/Off** switch next to a layout to enable or disable it.



The TouchPro Setup Panel

Patient Status Display

To configure the Patient Status Display displayed on the Run screen, click **Patient Status Display** under the SCE Configuration heading on the SCE Editor.

The Patient Status Display screen appears.

The Patient Status Display Screen

To modify the Patient Status Display, drag and drop the desired waveform, numeric or volume widgets from the Available Widgets panel to an available Patient Status Display space.

NOTE: Waveforms occupy two spaces.

Once the desired widget is placed, click the widget to change the physiologic parameter displayed.

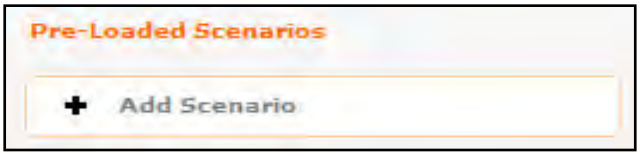
Adding a Scenario from the SCE Editor

SCEs incorporate scenarios that contain preprogrammed physiology. Scenarios can be added to SCEs to enhance patient physiology. When a scenario is added to an SCE from the SCE Editor, the scenario becomes associated with the SCE and begins automatically when the SCE is run.

Click the **Add Scenario** button on the Run screen to add a scenario to an SCE that is running.

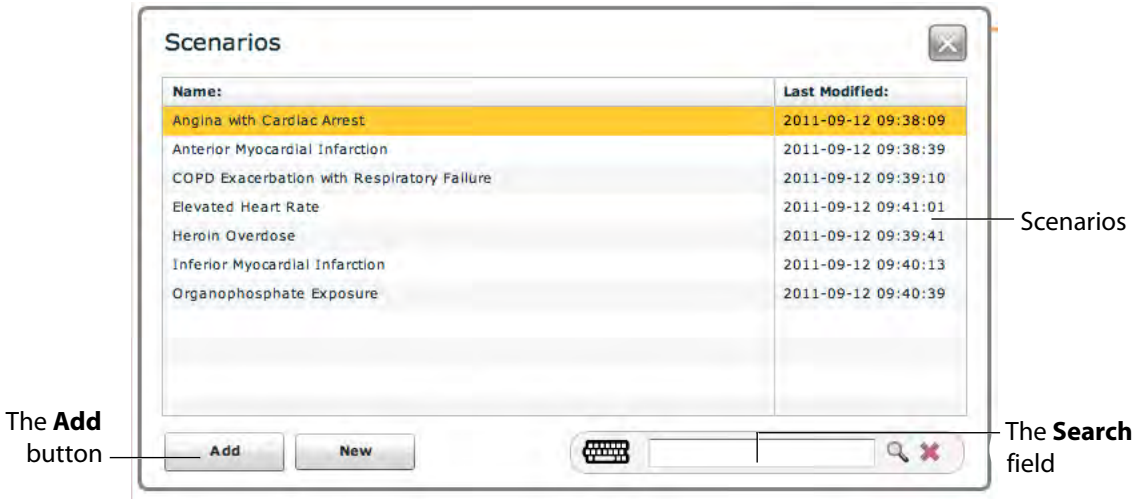
To add a scenario to an SCE from the SCE Editor:

1. Click the **Add Scenario** button under the Preloaded Scenarios heading.



The Add Scenario Button

The Choose Scenario dialog box appears.



The Choose Scenario Dialog Box

2. Select a saved scenario from the Choose Scenario Dialog Box.

   The **Search** field can be used to search for a scenario to select.

3. Click **Add**.

   The scenario is added to the SCE and is listed on the SCE Editor beneath the Pre-Loaded Scenarios heading.

For information about editing scenarios, see *Editing a Scenario on page 94*.

Developing Scenarios

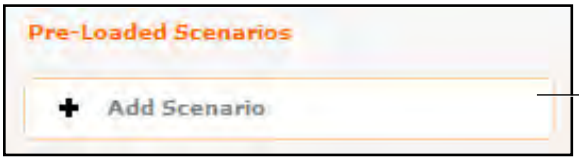
The Scenario Designer allows users to create and edit scenarios.

To access the Scenario Designer, create a new scenario or choose an existing scenario to edit.

Creating a New Scenario

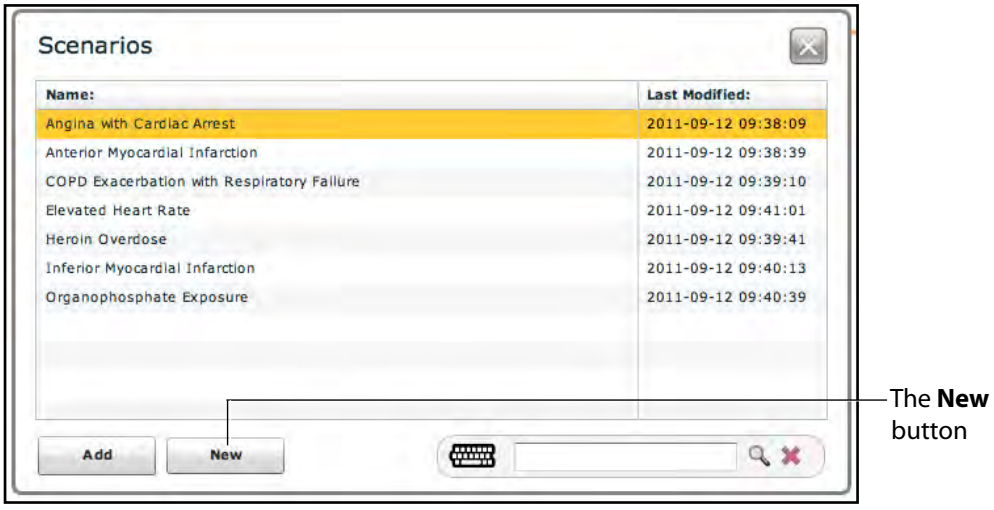
To create a new scenario:

1. From the SCE Editor, under the Pre-Loaded Scenarios heading, click the **Add Scenario** button.



The Pre-Loaded Scenarios Heading

The Choose Scenario dialog box appears.



The Choose Scenario Dialog Box

2. Click **New**.

   The Scenario Designer appears, displaying the new, untitled scenario.

The Scenario Designer

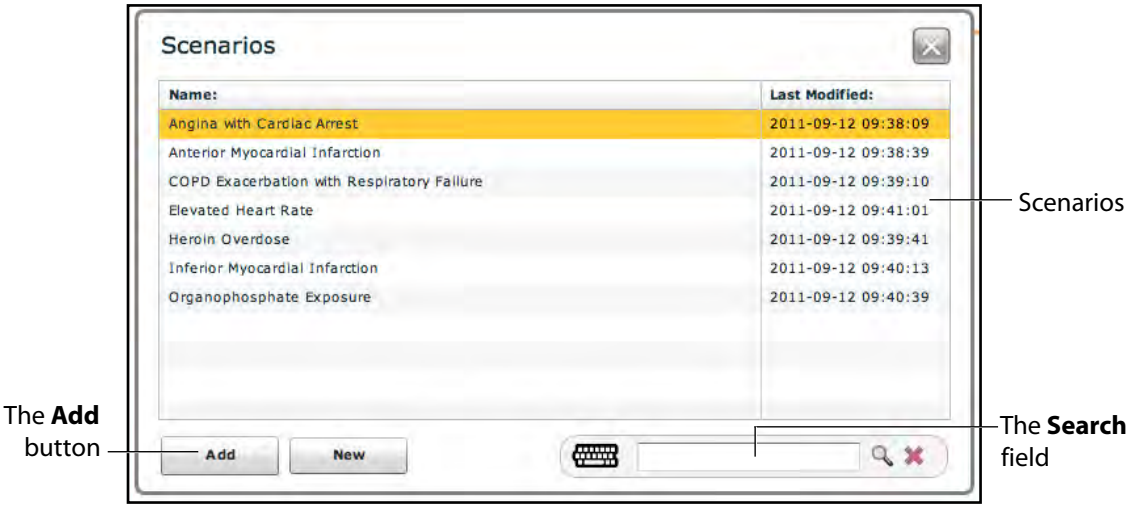
Editing a Scenario

To edit a scenario:

1. From the SCE Editor, under the Pre-Loaded Scenarios heading, click the **Add Scenario** button.

The Pre-Loaded Scenarios Heading

The Choose Scenario dialog box appears.



The Choose Scenario Dialog Box

2. Select a saved scenario from the Choose Scenario Dialog Box.

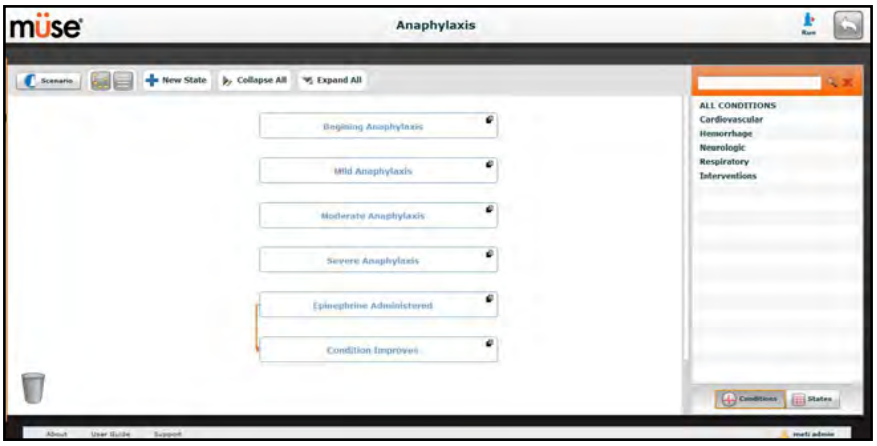
   The **Search** field can be used to search for a scenario to select.

3. Click **Add**.

   The scenario is added to the SCE and is listed on the SCE Editor beneath the Pre-Loaded Scenarios heading.

4. Click the scenario's name under the Pre-Loaded Scenarios heading.

The Scenario Designer appears, displaying the selected scenario.



The Scenario Designer

The Scenario Designer

The Scenario Designer is accessed by creating or editing a scenario from the SCE Editor.

From the Scenario Designer, scenario states can be added, modified and deleted.

The Scenario Designer

The **Scenario** button is used to manage states and save the scenario.

The **View** buttons toggle between Scenario Designer views.

The **New State** button is used to add new states.

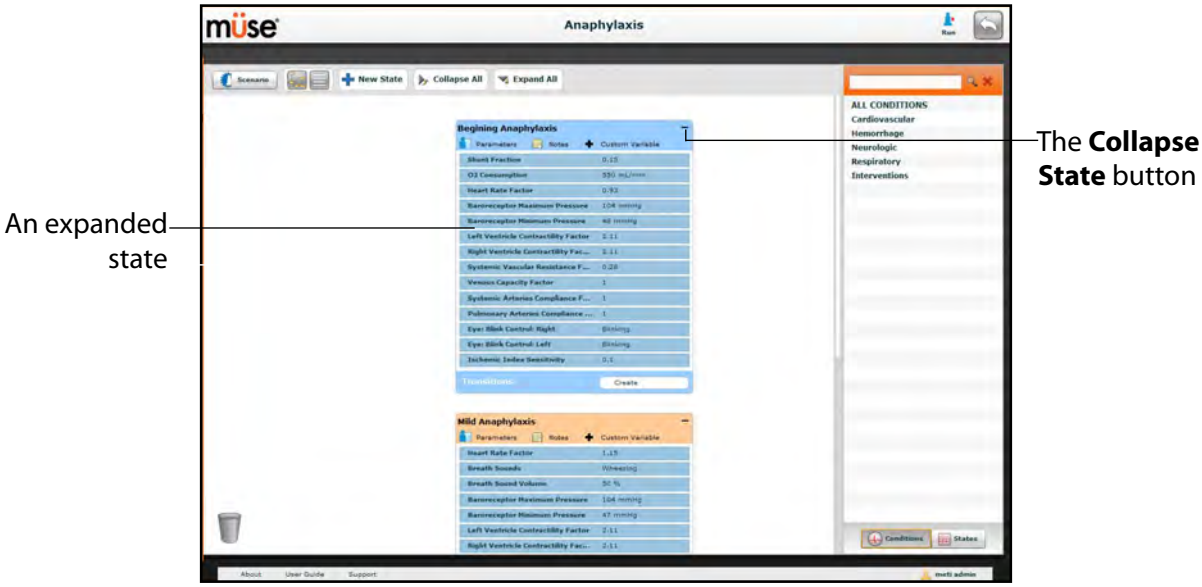
Once created, states are displayed on the Scenario Designer canvas.

Scenario Designer Views

The Scenario Designer has two views: the Graphical view and the Line Item view. The Graphical view allows users to map out scenario states. The Line Item view places the states and transitions into a linear format.

The Scenario Designer View Buttons

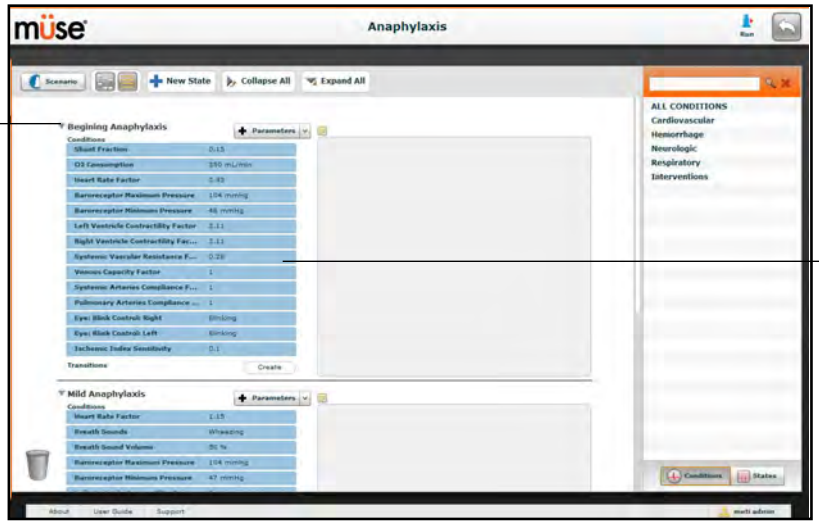
Click the **Graphical view** button to utilize the Graphical View.



The Graphical View

From the Graphical View, double-click on any state to expand it and view all its components. Click the **Collapse State** button to collapse an expanded state.

Click the **Line Item view** button to utilize the Line Item view.

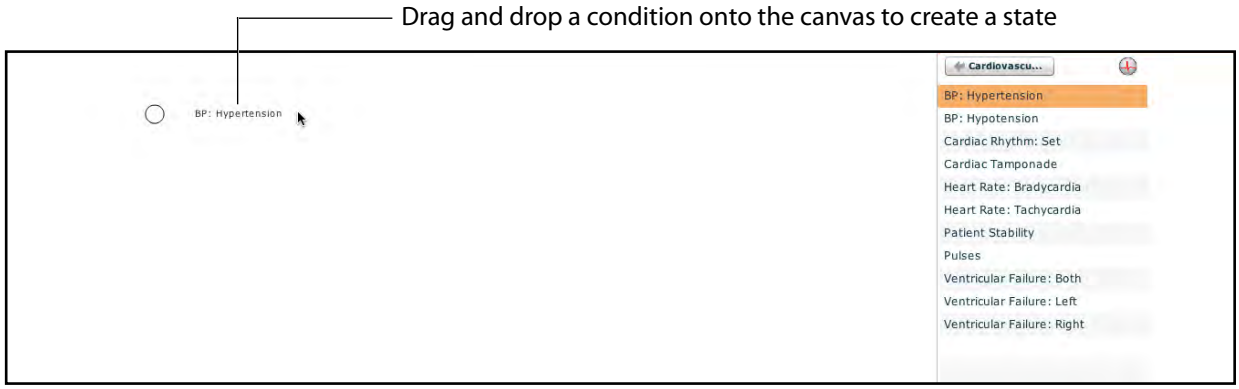


The Line Item View

From the Line Item View, click the **Expand/Contract** arrow to the left of any state to expand it and view all its components. Click the arrow again to collapse the state.

Adding Scenario States

When beginning to create a new scenario, the canvas is blank. Scenario states can be created by dragging and dropping conditions, medications and interventions from their respective menus on the right side of the Scenario Designer to the canvas.



The Scenario Designer Canvas

Or, a new, empty state can be added using the **New State** button.

To add a new state using the **New State** button:

1. Click the **New State** button on the upper left side of the Scenario Designer.

The New State Button

A new state appears.

A New State

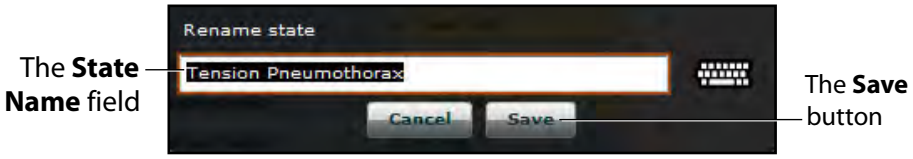
2. From the Graphical View, double-click the new state, or from the Line Item View, click the **Expand/Collapse** arrow to the left of the state to expand it.

   The state expands and additional options appear.

The Expanded State

3. Double-click the state name. (By default, new states are named "State.")

   The Rename state window appears and contains a field for entering a new state name.



The Rename State Window

4. Enter a new state name.

   NOTE: When naming a Scenario State, the state name may NOT exceed 127 characters Additionally, scenario file and state names CANNOT contain any special characters, such as (/ \ : * ? < > % | ")

5. Click **Save**.

   The state is renamed.

Modifying Scenario States

Once a scenario state has been placed on the canvas, it can be modified. Additional parameters, transitions and notes can be added. Each state can contain multiple parameters and transitions. Double-click the state name to rename it.

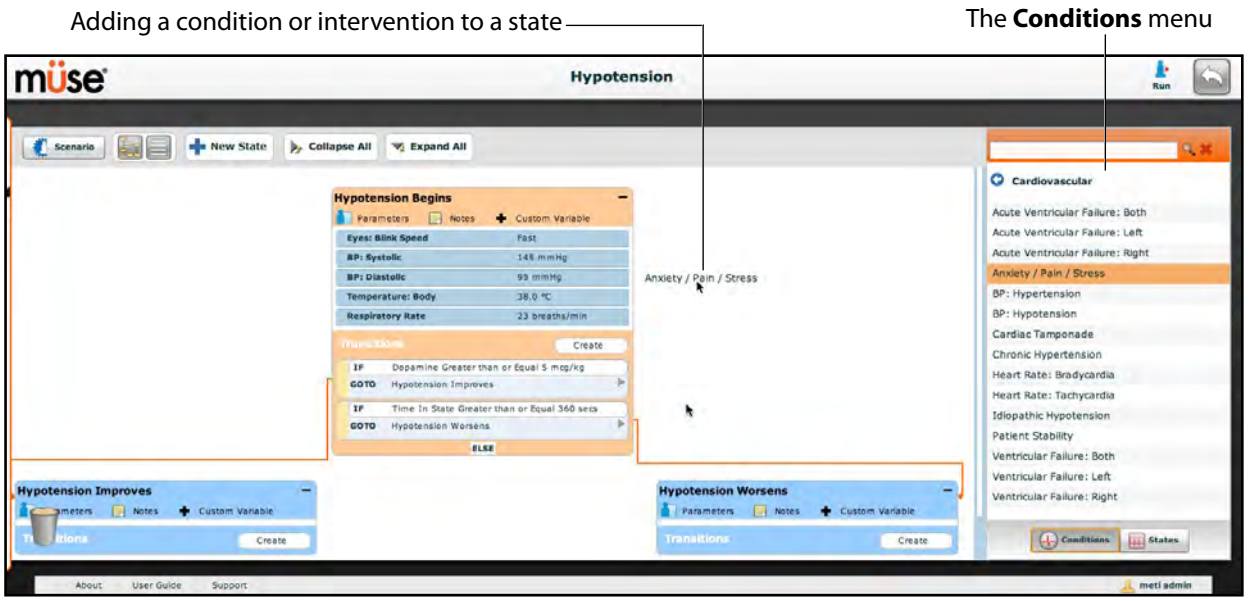
A State

Click the **Collapse State** button to minimize the state.

Double-click the collapsed state to expand it.

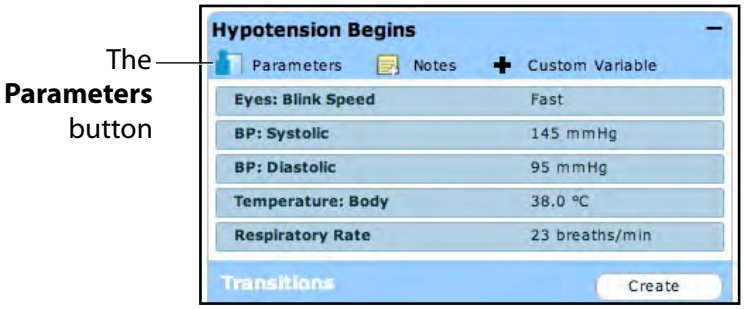
Adding Conditions, Interventions and Parameters

Conditions and interventions can be added to states by dragging and dropping them from the **Conditions** menu to the desired state.



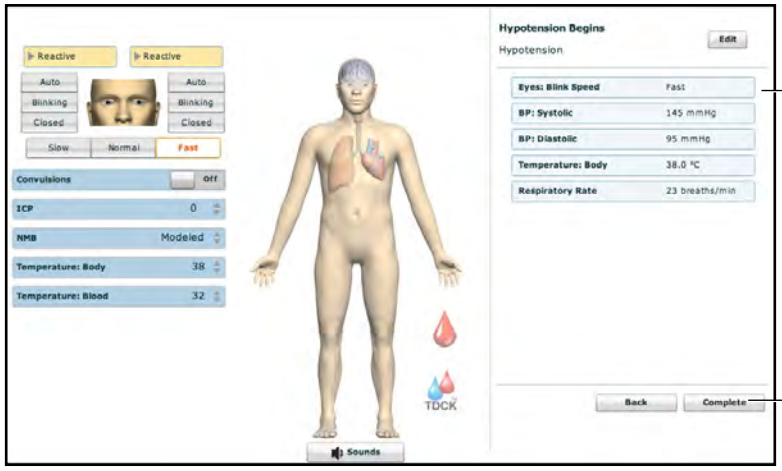
The Scenario Designer

To add parameters to a state, click the **Parameters** button within the state.



A State

The State Parameters screen appears.



The State Parameters Screen

Click the various organs to change the views, and then select the desired parameter. Once a parameter has been selected, it appears in the State Parameters panel on the right side of the screen.

Add as many parameters as needed. Added parameters appear consecutively within the state. Drag and drop to reorder as needed. Click **Complete** to save and exit the State Parameters screen, or click **Back** to exit without saving.

NOTE: If the physiology of any of the parameters conflicts, the Müse software reflects the physiology of the last parameter entered.

Adding Transitions

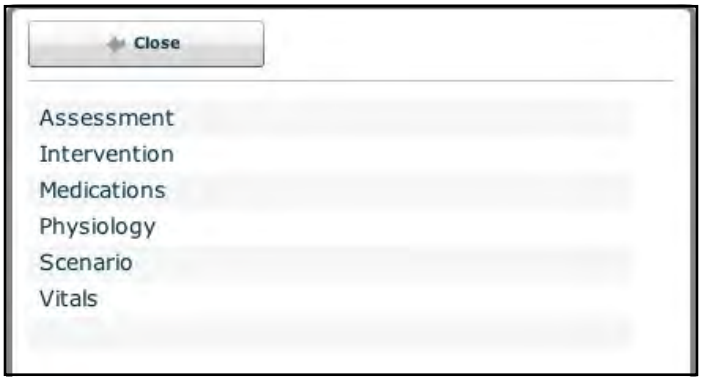
To add a transition, the scenario must have both an original state and a state that results from the transition.

To add a transition:

1. Click the **Create** button in the original state.

A State

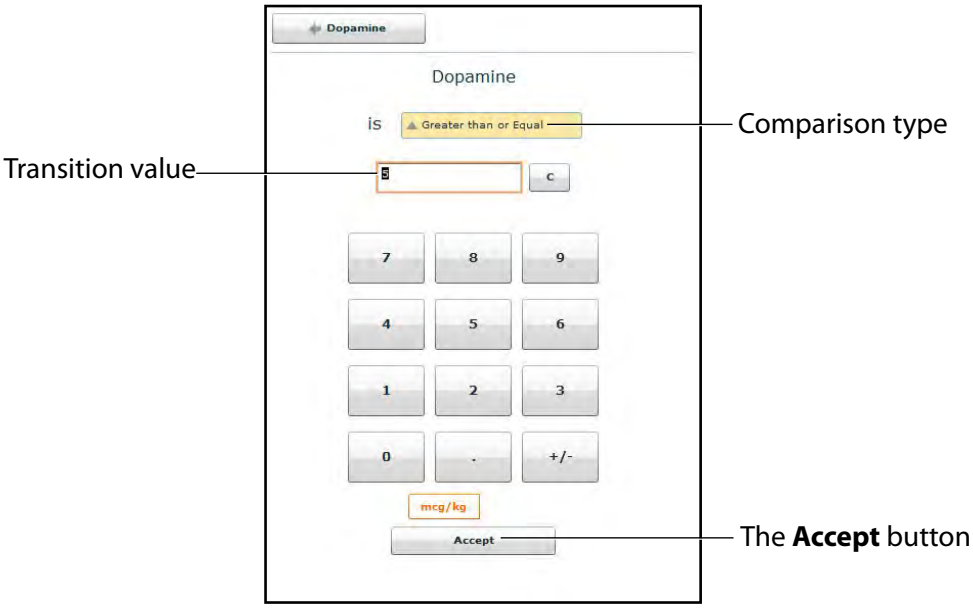
The Transitions Menu appears, listing all available transition variable types.



The Transitions Menu

2. Select the desired variable type. For example, if a transition based on the administration of medication is desired, select **Medications** and then select the desired medication from the list.

Once a medication is selected, The Medication Transition menu appears, asking for the comparison type and transition value.



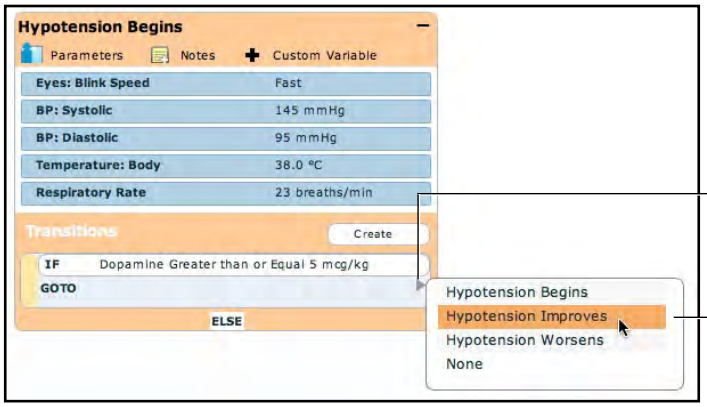
The Medication Transition Menu

Follow the same steps to make selections from similar menus for the **Assessment**, **Intervention**, **Physiology**, **Scenario** and **Vitals** variable types.

3. Once the variable values (e.g., comparison type and transition value) have been selected, click **Accept**.

   The selected transition variable is listed beneath the original state on the Scenario Designer.

4. From the Scenario Designer, click the **GOTO** arrow beneath the new transition variable.

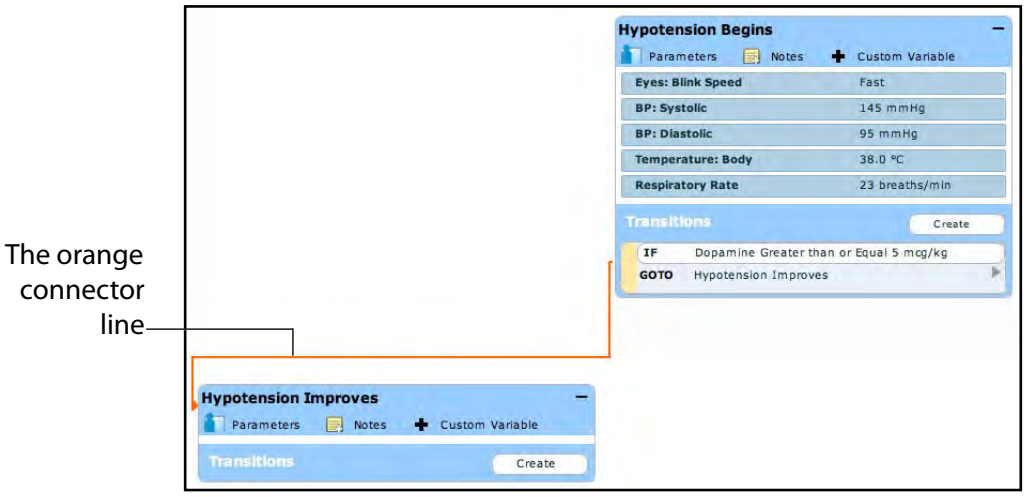


The Scenario Designer

The Available States menu appears, listing all the available states.

5. Select a state from the menu.

An orange connector line appears, indicating that the states are now linked by a transition.



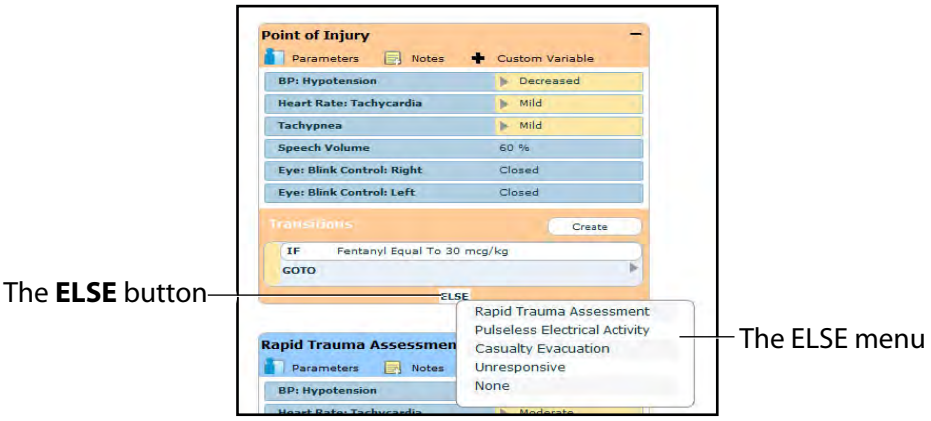
The Scenario Designer

ELSE Transitions

An ELSE transition is used to transition to a state automatically when none of the other programmed transitions occur.

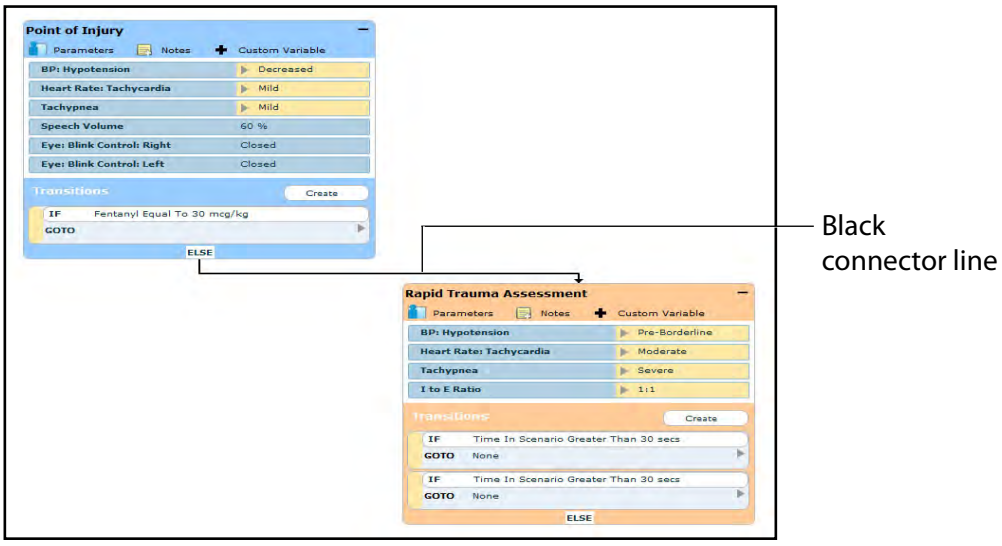
Before specifying an ELSE transition from a state, the state must first contain at least one other transition.

To add an ELSE transition, click **ELSE** in the original state. The ELSE menu appears, listing all the available states.



The Scenario Designer

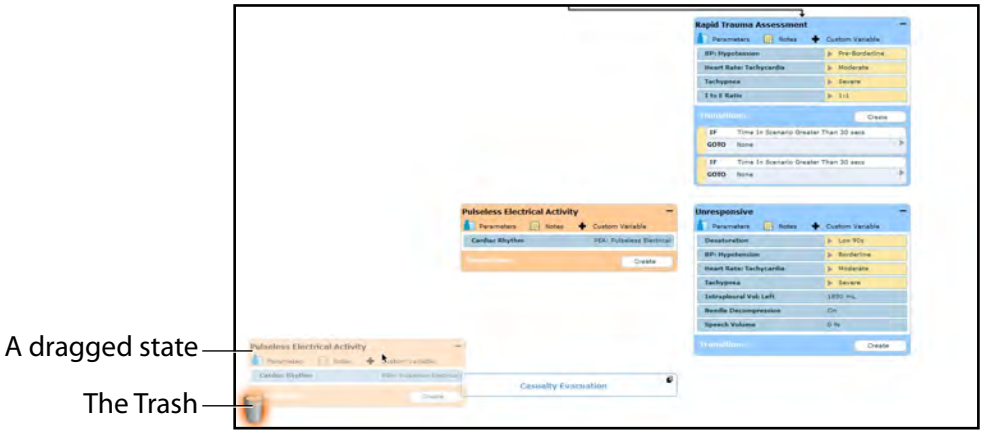
Select the desired state. A black connector line appears, indicating that the states are now linked by an ELSE transition.



The Scenario Designer

Deleting Scenario States

To delete a state, drag and drop the state into the Trash.



The Scenario Designer

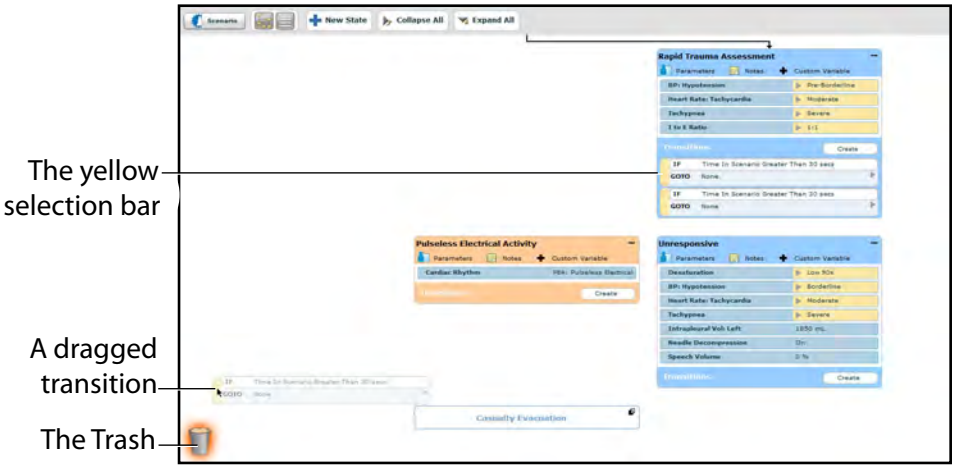
States can be dragged and dropped to the Trash from the Graphical view or the Line Item view.

Deleted states remain in the Trash until you log out of the software or the Trash is cleared.

Deleting Parameters and Transitions

To delete a parameter or transition, from an active state, drag and drop the desired parameter or transition into the Trash.

To drag a parameter, click anywhere within the parameter. To drag a transition, click the yellow selection bar to the left of the transition.



The Scenario Designer

Parameters and transitions can be dragged and dropped to the Trash from the Graphical view or the Line Item view.

Deleted parameters and transitions remain in the Trash until you log out of the software or the Trash is emptied.

Saving the Scenario

At any time during scenario creation or modification, the scenario can be saved.

To save a scenario:

1. Click the **Scenario** button in the upper left of the Scenario Designer.

   The Scenario drop-down menu appears.

The Scenario Drop-Down Menu

2. To save the most recent version of a modified scenario, click **Save**,

   OR

   To save a modified scenario as a new scenario, leaving the original scenario intact:

   a. Click **Save As**.

      When **Save As** is clicked, the Save Scenario dialog box appears.

The Save Scenario Dialog Box

   b. Enter the name for the scenario in the **Enter scenario name** field.

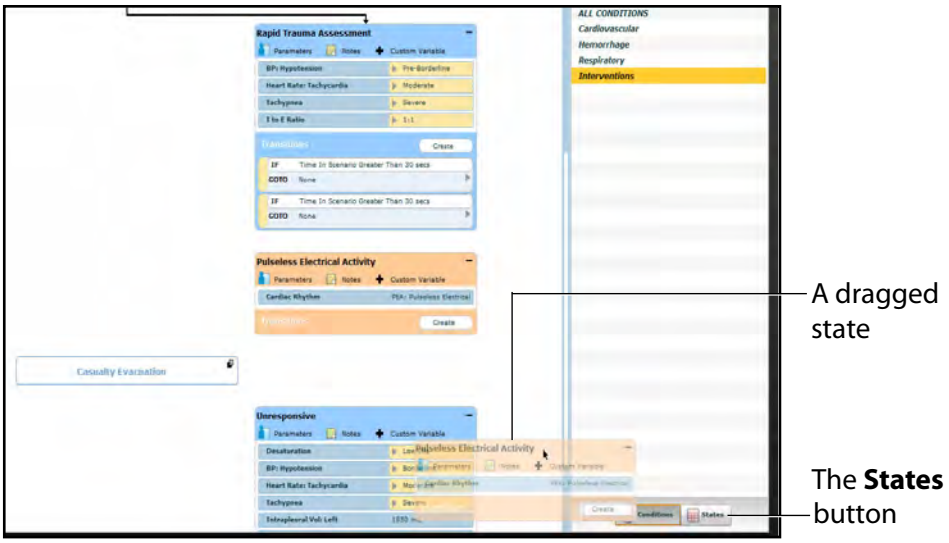
   c. Click **Save**.

NOTE: When naming a scenario, the scenario name CANNOT exceed 128 characters. Additionally, scenario file names CANNOT contain any special characters, such as / \ : * ? < > % |“

Saving States to the State Library

Users can save states to the State Library for later use.

To save a state, drag and drop the state to the **States** button.



The Scenario Designer

The state is stored in the library.

To access the State Library, click the **States** button in the bottom right corner of the Scenario Designer.

The States Button

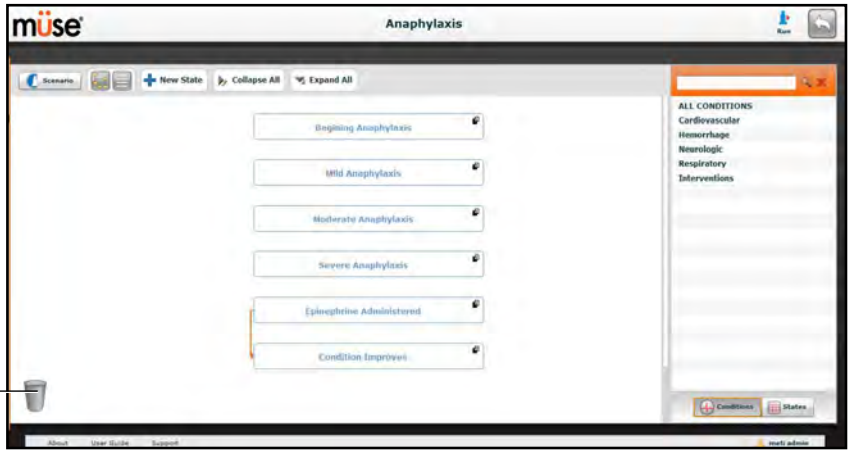
The State Library appears, listing all saved states.

The State Library

Click **Conditions** to exit the State Library.

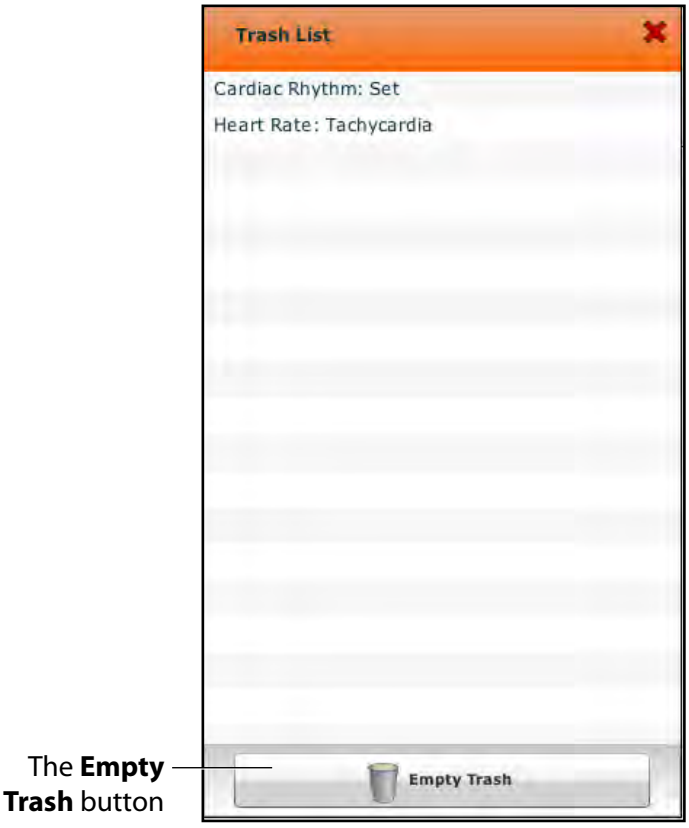
Emptying the Trash

To empty the Trash, click the **Trash** icon in the lower left corner of the Scenario Designer.



The Scenario Designer

The Trash List appears.



The Trash List

Click **Empty Trash** to empty the Trash. If you do not wish to delete the items listed, they can be dragged back into the scenario, at which time they are removed from the Trash.

Logging out of the software automatically empties the Trash.

IMPORTANT: Items emptied from the Trash cannot be retrieved.

Administrative Tools

The Müse software has administrative tools that allow users to manage logs, stored content, users and system settings. The administrative tools are accessed via the Administrative Tools buttons, located on the Home page.

The Administrative Tools Buttons

Click the **History** button to view and manage simulation session logs.

Click the **System Administration** button to manage stored content, user accounts, groups and system settings.

Click the **Account Profile** button to manage and determine preferences for the active account.

History

From the History screen, users can view and export simulation session logs. Each simulation session is listed with the Start Time, the title of the SCE and the Patient's name. In addition, the Physiological Data and Simulation Events are available for review and export.

Start Time	SCE	Patient	Simulation Events	Physiological Data	Clear All Logs
2011-11-16 14:21:57	Healthy Adult Male	Stan D. Ardman II	Simulation Events	Physiological Data	Clear
2011-11-16 13:06:27	Healthy Adult Male	Stan D. Ardman II	Simulation Events	Physiological Data	Clear
2011-11-15 10:51:44	Healthy Adult Male	Stan D. Ardman II	Simulation Events	Physiological Data	Clear
2011-11-15 10:38:23	Anaphylaxis	Holly Monroe	Simulation Events	Physiological Data	Clear

The History Screen

By clicking the **Simulation Events** link of a Simulation Session, users can view the entire log of the simulation and all the events that occurred during the SCE.

When the **Physiological Data** link of a Simulation Session is clicked, users can view all the physiological data that occurred during the SCE.

On both the Simulation Events and Physiological Data screens, there is an **Export** button that, when clicked, exports the data to a CSV file that can be stored on an external device.

System Administration

From the System Administration screen, users can control and access Content Management, User Accounts, Groups, Maintenance and System Settings.

To access the System Administration screen, click the **System Administration** button from the Home page.

The System Administration Button

The System Administration screen is displayed.

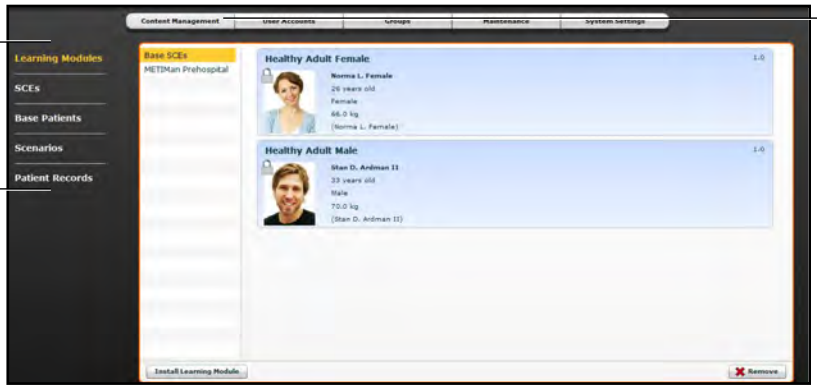
The System Administration Screen

Content Management

From the Content Management options, users can manage learning applications, SCEs, Base Patients and Scenarios.

To access the Content Management options, from the System Administration screen, click **Content Management**.

The Content Management options appear.

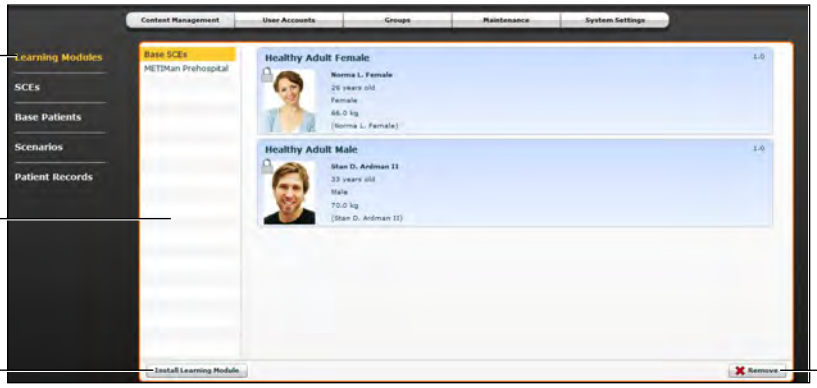


The System Administration Screen

Learning Modules

From the Learning Modules panel, learning applications can be installed or deleted.

When the Content Management button is selected, the Learning Modules panel appears by default. If another panel has been selected, return to the Learning Modules panel by clicking the **Learning Modules** link.



The Learning Modules Panel

To install a learning application:

1. Click **Install Learning Module**.

   The Select file to upload dialog box appears.

2. Locate the correct learning application file on the external storage device or the hard drive location where the SCE file is saved. The file extension is **mlm**.

3. Select the file and click **Select** or **Open**.

4. Refresh the screen by clicking the **Home** button in the Müse software and then return to the Learning Modules panel.

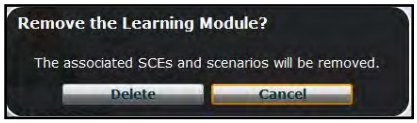
   The learning application appears on the Learning Modules panel and is available for use.

To delete a learning application from Müse:

1. Select a learning application from the Learning Applications panel.

2. Click the **Remove** button.

   The Remove Learning Module warning appears.



The Remove Learning Module Warning

3. Click **Delete**.

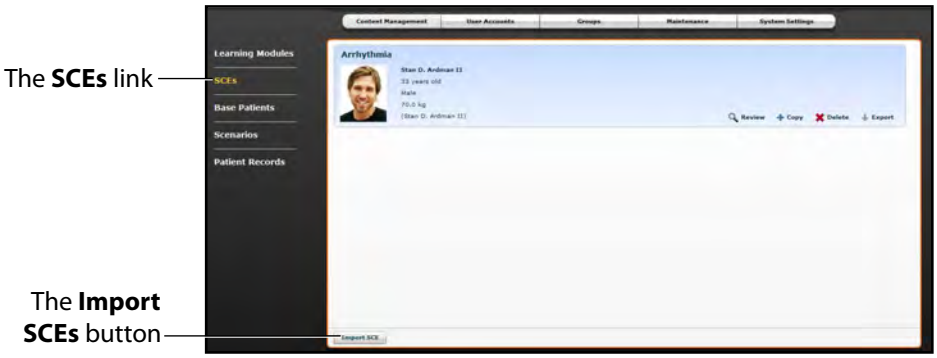
   The learning application and all its SCEs are deleted.

   NOTE: Preconfigured learning applications cannot be deleted. If a user attempts to delete them, a failure message appears.

SCEs

From the Content Management options, click **SCEs** to access the SCEs panel.

The SCEs panel appears.



The SCEs Panel

All user-created SCEs are listed in the SCEs panel.

On the SCEs panel, users can review, copy, delete, import and export the SCEs they have created.

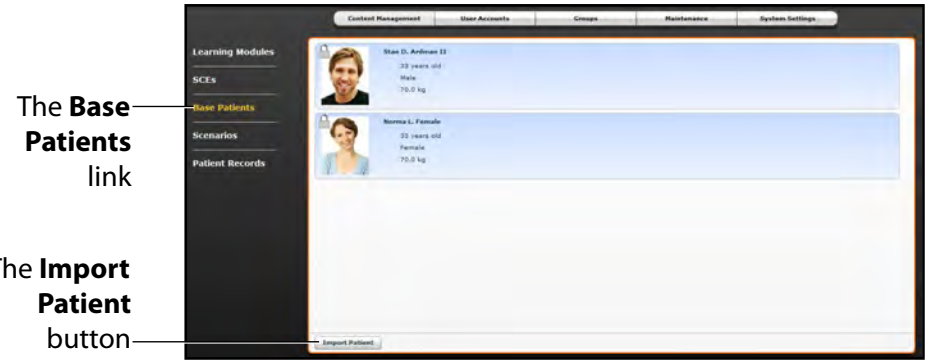
NOTE: SCEs purchased from CAE Healthcare CANNOT be exported.

Click **Import SCE** to import an SCE from an external device or the hard drive location where the SCE file is saved. Click **Export** to export an SCE to an external device. The SCE file extension is **sce**.

Base Patients

From the Content Management options, click **Base Patients** to access the Base Patients panel.

The Base Patients panel appears.



The Base Patients Panel

All Patients are listed in the Base Patients panel.

From the Base Patients panel, users can rename, review, delete and export Patients they have created by clicking the respective buttons next to each Patient.

Click **Import Patient** to import a Patient file from an external device or the hard drive location where the SCE file is saved. Click **Export** to export a Patient file to an external device. The Patient file extension is **pat**.

NOTE: Preconfigured CAE Healthcare Base Patients CANNOT be exported.

Scenarios

From the Content Management options, click **Scenarios** to access the Scenarios panel.

The Scenarios panel appears.

The Scenarios Panel

All Scenarios are listed in the Scenarios panel.

From the Scenarios panel, users can rename, review, delete, import and export Scenarios they have created by clicking the respective buttons within each scenario. Locked Scenarios can only be reviewed.

Users can also create new scenarios from the Scenarios screen by clicking the **Create New Scenario** button.

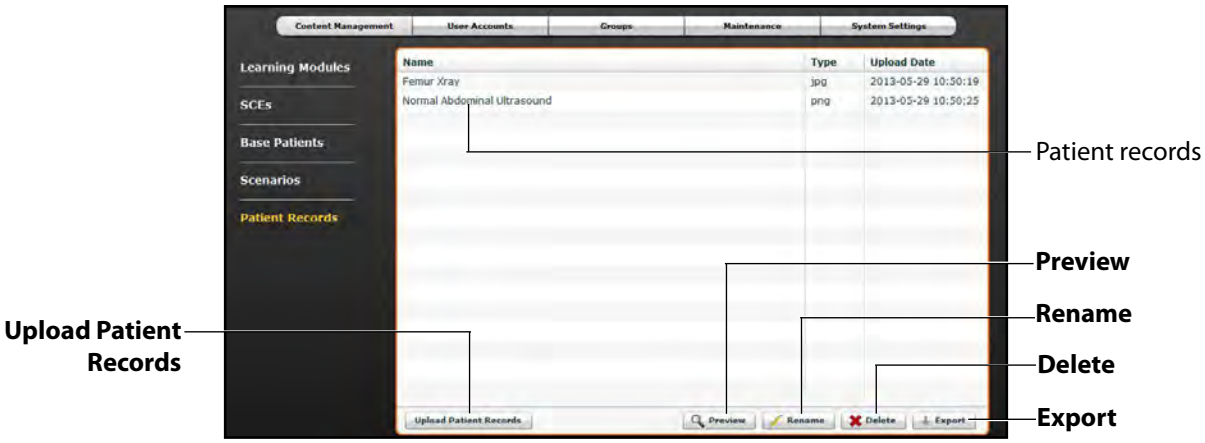
Click **Import** to import a scenario file from an external device or the hard drive location where the SCE file is saved. Click **Export** to export a scenario file to an external device. The scenario file extension is **mss**.

NOTE: Preconfigured CAE Healthcare scenarios CANNOT be exported.

Patient Records

Patient records can be uploaded to Müse for display in the TouchPro software. Once uploaded, a patient record is available for use with any SCE.

Patient Records are managed from the Patient Records panel on the **Content Management** tab of the System Administration screen.



The Patient Records Panel

The following patient record file types can be uploaded to Müse:

- JPG or JPEG images
- GIF images
- PNG images
- XPS images
- PDF documents
- MPEG videos
- MOV videos
- MP3 audio files

A single patient record file cannot exceed 20MB.

To upload a patient record:

1. From Patient Records panel, click **Upload Patient Records**.

   A file selection window appears.

2. Select the desired file and click **Open** or **OK.**

   The file is uploaded and is now available to display in the TouchPro software.

Müse can store up to 2GB of patient record files. To ensure adequate space, please delete patient records when they are no longer needed.

To delete a patient record:

1. From the Patient Records panel, select the patient record to delete**.**
2. Click **Delete**.

   The patient record is deleted and is no longer available to display in the TouchPro software.

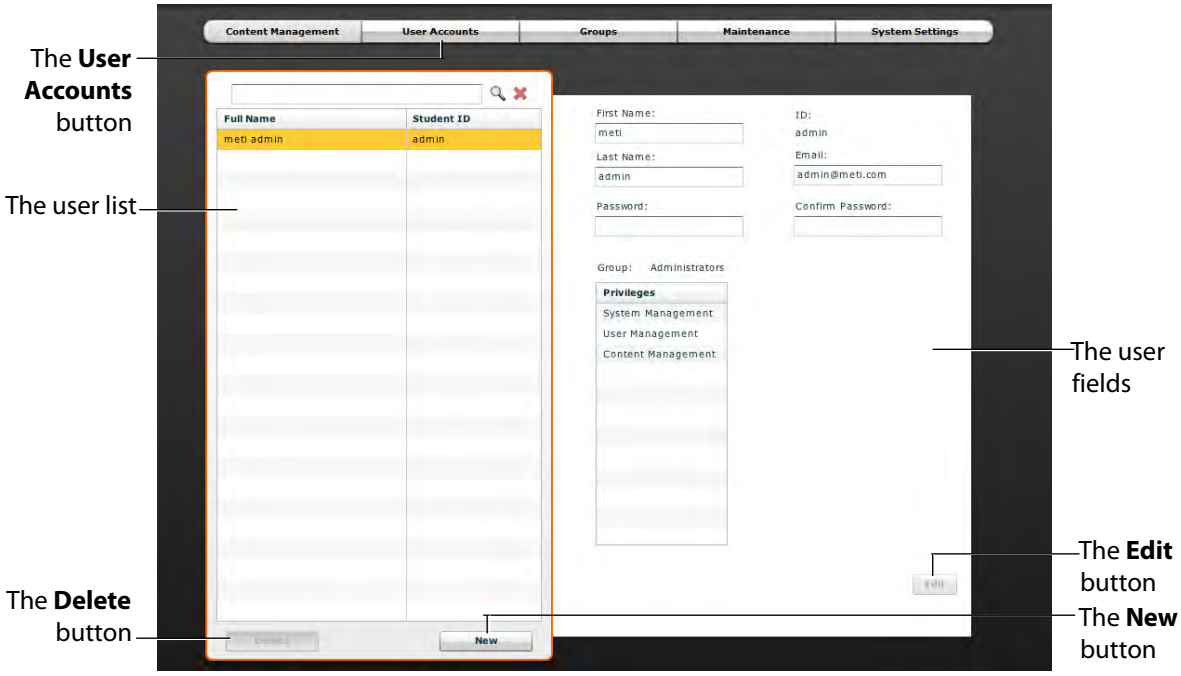
Individual patient records can also be previewed, renamed or exported by selecting the record and clicking **Rename**, **Export** or **Preview**.

For information about displaying patient records in TouchPro, see *Displaying Patient Records on page 54*.

User Accounts

To access the User Accounts panel, from the System Administration screen, click the **User Accounts** button. The User Accounts panel appears.

From the User Accounts panel, users can create, edit and delete users.



The User Accounts Panel

NOTE: User Accounts functions are available only to users with the User Management or System Management privilege.

Creating a User

To create a new user:

1. From the User Accounts panel, click **New**.

   The New Account Creation panel appears.

2. In the New Account Creation panel, enter the user's personal data and choose a password.

3. Assign the user to a group by selecting a group from the **Group** menu.

   NOTE: A user can only be assigned to one group.

4. Click **Create**.

   The new user is created and the New Account Creation panel disappears.

Editing a User

To edit a user's information or privileges:

1. On the User Accounts panel, select the user to edit.

2. Click **Edit**.

   The user fields become editable.

3. Make the desired changes.

4. Click **Save**.

Deleting a User

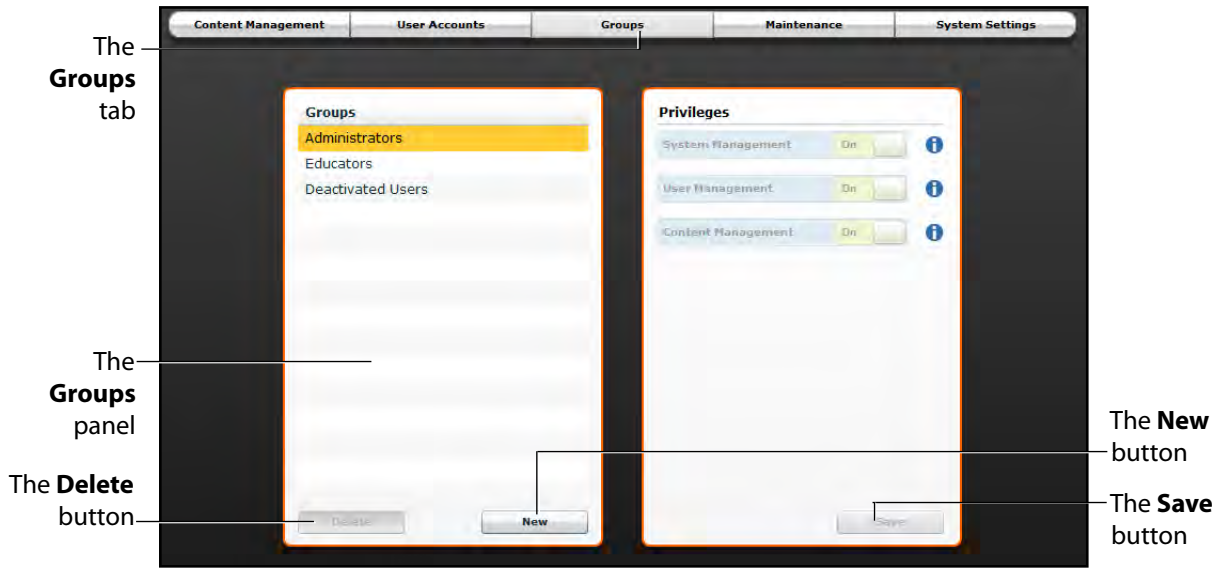
To permanently delete a user, from the User Accounts panel, select a user and click **Delete**. When the User Deletion Warning box appears, click **Yes**.

The user account and the data associated with it are deleted. However, the administrative user deleting the account becomes the owner of any SCEs, scenarios or patients created by the user being deleted (i.e., the SCEs, scenarios and patients created by the deleted user are moved to the deleting user's account).

Groups

Users are assigned to groups to define access privileges. To access the Groups panel, from the System Administration screen, click **Groups**.

The Groups panel appears.



The Groups Panel

NOTE: Groups functions are available only to users with the User Management or System Management privilege.

From the Groups panel, users can create new groups, delete groups and assign privileges to groups.

In the Groups panel, three groups appear by default:

- Administrators
- Educators
- Deactivated Users

Each default group has privileges assigned.

Privilege System

The Müse software has three different privileges:

- System Management
- User Management
- Content Management

User Management and Content Management can be assigned independently or combined. The System Management privilege contains all privileges.

System Management

Users with the System Management privilege have access to all features of the Müse software, including the benefits of the User Management and Content Management privileges, listed below. Users with the System Management privilege can also view system settings, back up and restore data and apply software updates.

User Management

Users with the User Management privilege can manage all users and groups.

Content Management

Users with the Content Management privilege can create and manage all SCEs.

Creating a New Group

To create a new Group:

1. From the Groups panel, click **New**.

   The **Group Name** field appears.
2. Enter the name of the Group in the **Group Name** field.
3. Click **Create Group**.

   The group appears in the Groups panel. Privileges can now be selected.
4. Select the privilege(s) to be assigned to the Group.
5. Click **Save**.

Deleting a Group

Groups can be deleted when they are no longer needed. Once a Group is deleted, all users who were affiliated with the Group are moved to the Deactivated Users Group.

To permanently delete a Group, select the group to be deleted from the Groups panel and click **Delete**. When the Group Deletion warning box appears, click **Yes**.

Providing Access to Content Only

To provide users with the ability to create and manage SCEs but not the ability to manage users or groups:

1. Create a new group called Content Only.
2. Assign the group the Content Management privilege. Do NOT assign any other privileges to the group.
3. On the **User Accounts** tab, create or edit the desired users, placing each user in the Content Only group.

Maintenance

The Maintenance panel is used to flush fluids from the simulator. To access the Maintenance panel, from the System Administration screen, click **Maintenance**.

The Maintenance panel appears.

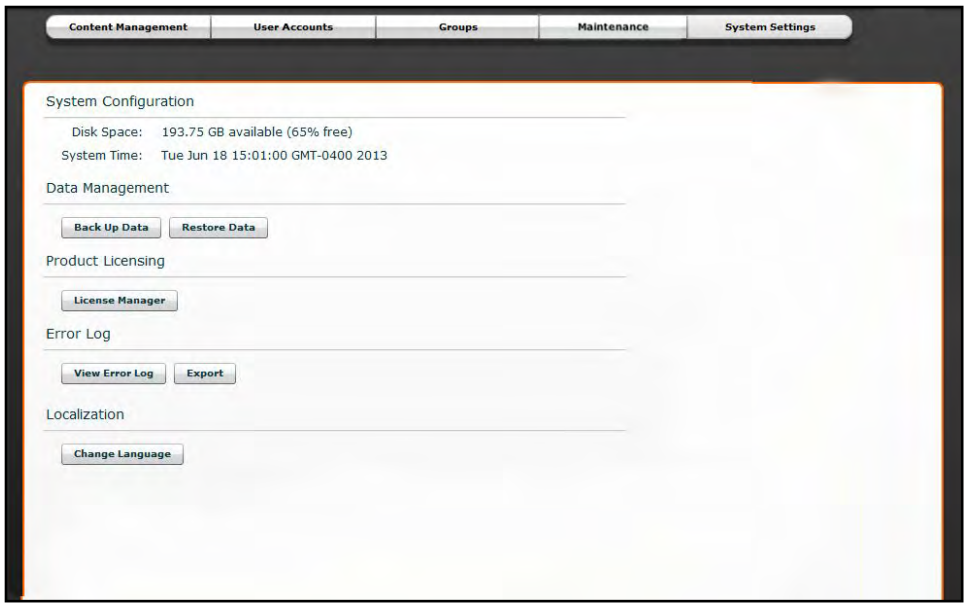
The Maintenance Panel

System Settings

From the System Settings panel, users can manage the System Configuration, Data Management and Product Licensing of the Müse software.

To access the System Settings panel, from the System Administration screen, click **System Settings**.

The System Settings panel appears.



The System Settings Panel

NOTE: System Settings functions are available only to users with the System Management privilege.

System Configuration

Under System Configuration, Disk Space and System Time are displayed.

Data Management

The Data Management feature allows users to back up data to an external device. Users can also restore the backup data.

Backing Up Data

Back up data to protect and store content and user data.

To back up data:

1. On the System Settings panel, click the **Back Up Data** button.

The Back Up Data Button

   A Save dialog box appears.

2. Select a location to save the backed up data.
3. Click **Save**.

IMPORTANT: To protect content and user information, data should be backed up weekly.

Restoring Data

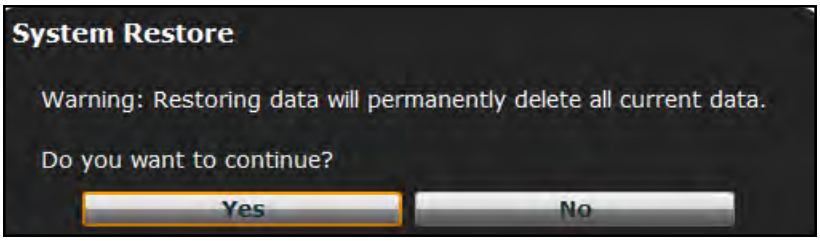
Restore data when the backed up data needs to be replaced on the software. Restoring data only restores the last backup and does NOT merge the backup data with the current data.

To restore backup data:

1. On the System Settings panel, click **Restore Data**.

The Back Up Data Button

The System Restore warning box appears stating that restoring data erases all current data and asks if you want to continue.



The System Restore Warning Box

IMPORTANT: Restoring data ERASES all current data and replaces it with the backed up data.

2. Click **Yes**.

   A select file dialog box appears.

3. Locate the appropriate .bak backup file to restore.
4. Click **Select**. The data is restored.

Product Licensing

To view product licensing information for your simulator or to enter a license key to activate your software, click **License Manager**.

Error Log

The Error Log is available for technicians and is used when diagnosing the Müse software.

IMPORTANT: Do not clear the Error Log.

Localization

To change the language of the Müse software:

1. From the System Settings panel, under the Localization heading, Click **Change Language**.

   The Change Language dialog box appears.

2. Select a language from the dialog box.
3. Click **Accept**.

   The Müse user interface changes to the selected language.

NOTE: Only the English version of the User Guide is available via the software, regardless of the Müse language selection. To access the User Guide in other languages, please visit www.caehealthcare.com and click the **Support** link.

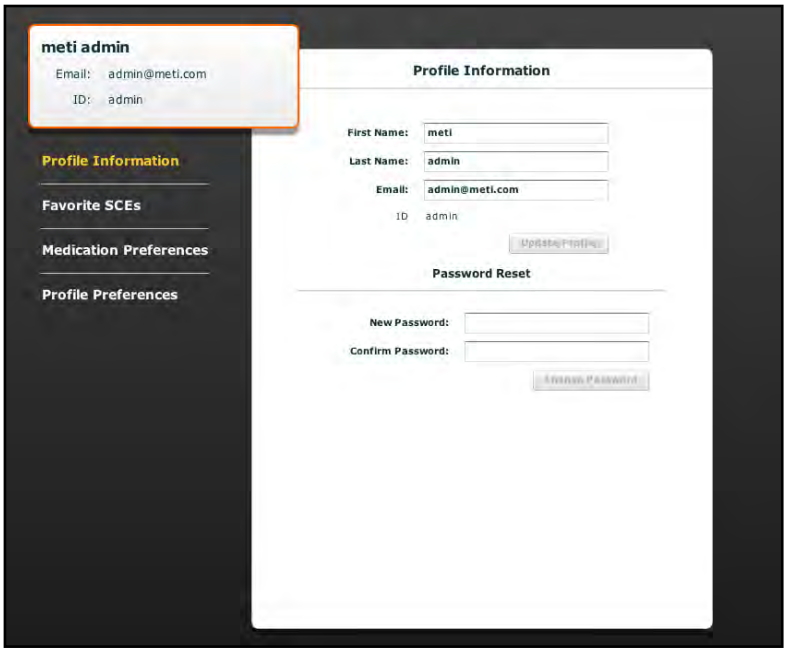
Account Profile

From the Account Profile screen, users can view, update and reset personal profile information. Users can also view and add favorite SCEs from this screen.

Click the **Account Profile** button to access the Account Profile features.

The Account Profile Button

The Account Profile screen appears.

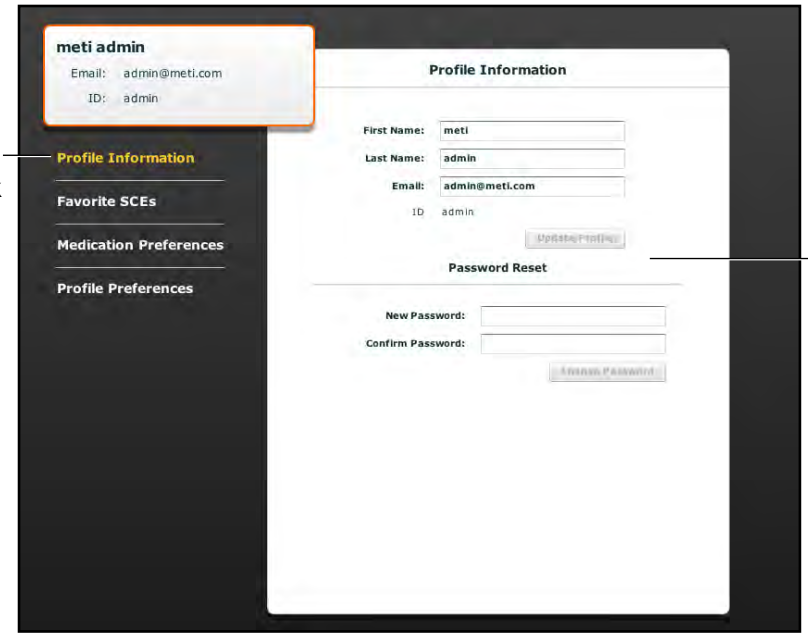


The Account Profile Screen

Profile Information

From the Account Profile screen, the Profile Information panel appears by default. If another panel has been selected, click **Profile Information** to return to the Profile Information panel.

From the Profile Information panel, users can change their profile information and reset their passwords.



The Account Profile Screen

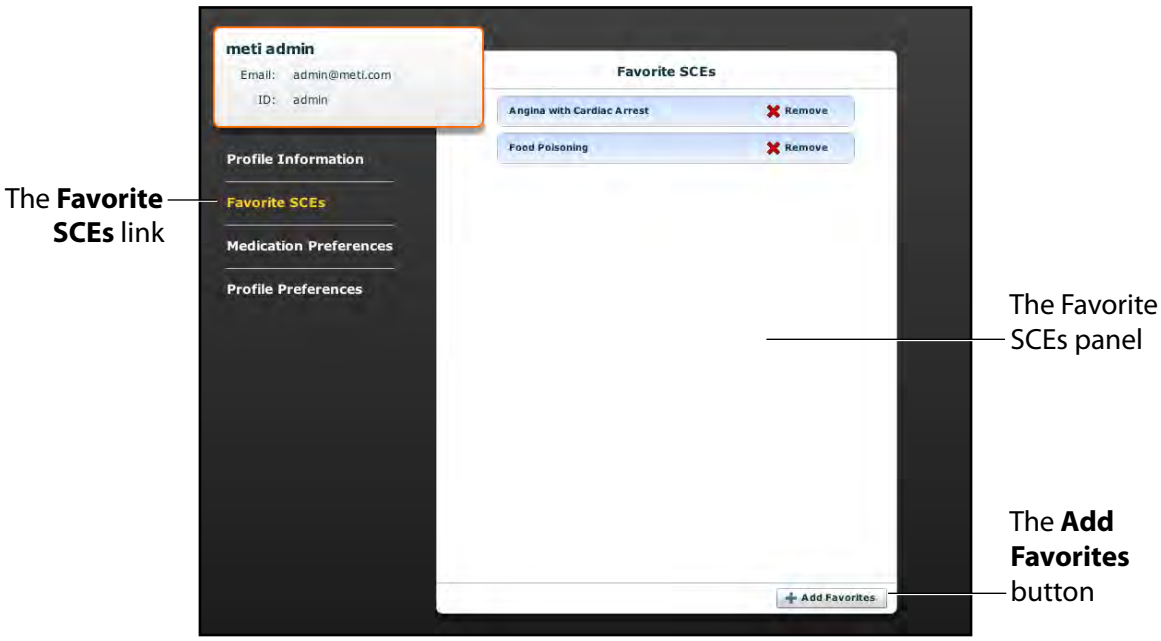
To change profile information, enter the new information in the appropriate fields and click **Update Profile** when finished.

To reset a password, enter the new password in the **New Password** field and re-enter the new password in the **Confirm Password** field. Click **Change Password** when finished.

IMPORTANT: If you change your username or password, you MUST use the new username and/or password upon your next login. You cannot access the system with the old username or password once it has been changed.

Favorite SCEs

To access the Favorite SCEs panel, click **Favorite SCEs** from the Account Profile screen. All of the logged-in user's favorite SCEs appear in the Favorite SCEs panel.



The Account Profile Screen

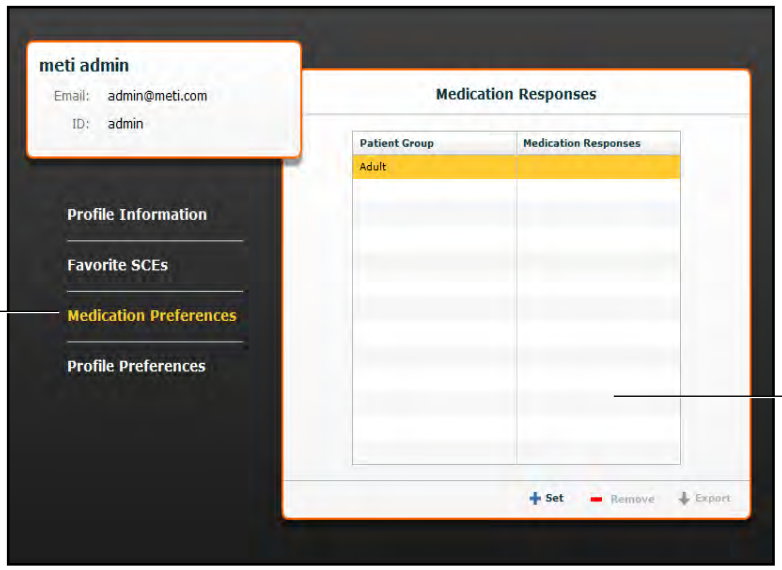
To add SCEs to the Favorite SCEs panel, click **Add Favorites**. The SCE Library appears. Select the desired SCE and it automatically appears in the Favorite SCEs panel.

Medication Preferences

From the Medication Preferences panel, users can import customized medication response files created in the Pharmacology Editor software.

To access Medication Preferences, click **Medication Preferences** on the Account Profile screen.

The Medication Preferences panel appears.



The Account Profile Screen

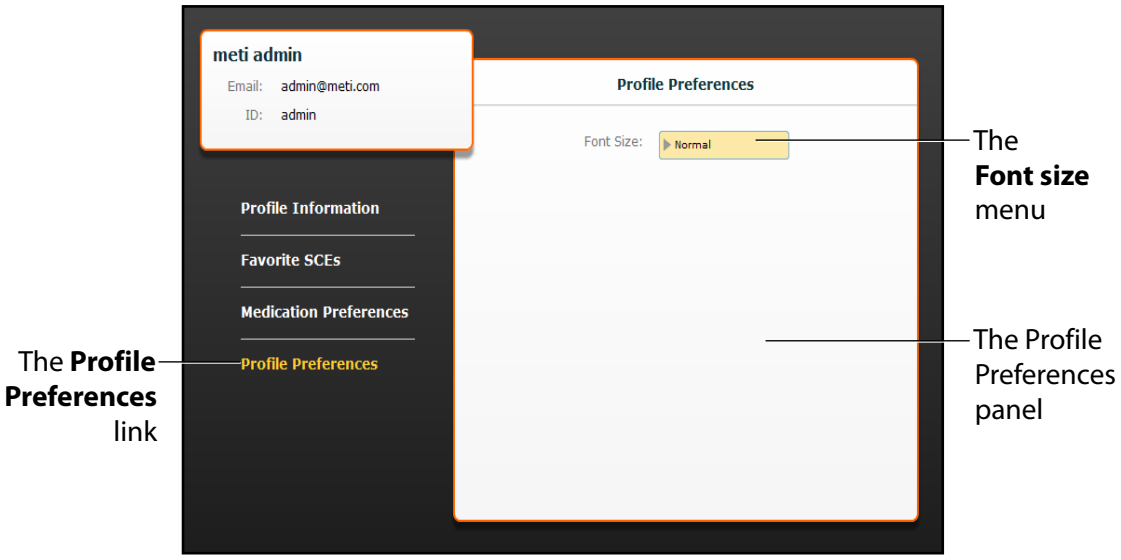
To import medication response files, click the **Set** button. The select file dialog box appears. Select the medication response file to be added and click **Open** or **OK**.

Profile Preferences

From the Profile Preferences panel, users can change the font size used in the software.

To access Profile Preferences, click **Profile Preferences** on the Account Profile screen.

The Profile Preferences panel appears.



The Account Profile Screen

To change the font size, click on the **Font size** selection. The **Font size** drop-down menu appears.

From the **Font size** drop-down menu, select **Normal**, **Small** or **Large**.

USING TOUCHPRO

The TouchPro software enables users to view patient physiology.

The software can be used from the Instructor Workstation or on another computer provided the computer has joined the simulator's wireless network.

IMPORTANT: Only two TouchPro software screens can be open at a time.

Accessing the TouchPro Software

Like the Müse software, the TouchPro software is compatible with computers that have touch-screen capabilities.

To run the TouchPro software, the Instructor Workstation must be connected to the simulator's network.

IMPORTANT: An SCE must be running on the Müse software for any physiological data to be displayed on the TouchPro software. The TouchPro software can only show one Patient at a time.

To launch TouchPro from the Instructor Workstation:

1. With the Müse software running, open a new tab in the web browser and go to the **Home** page of the web browser.

   The Müse Start Screen appears.

The Müse Start Screen

2. Select the **TouchPro** icon.

When TouchPro opens, the simulated patient monitor appears.

The TouchPro Display

NOTE: The capnogram waveform is not displayed on the TouchPro software from the Instructor Workstation. Capnogram information can be found on the clinical patient monitor if one is connected to the simulator.

Modifying the TouchPro Display

The layout of the waveforms and numeric data shown on the TouchPro software can be customized.

The TouchPro software can show up to six waveforms plus an additional four numeric readouts.

Selecting a Preconfigured Layout

There are five preconfigured CAE Healthcare Layouts:

ICU-Arterial Line Only - preconfigured with waveform and numeric readouts for ECG Lead II, ECG Lead V, ABP, Pleth and a numeric readout for Body Temperature.

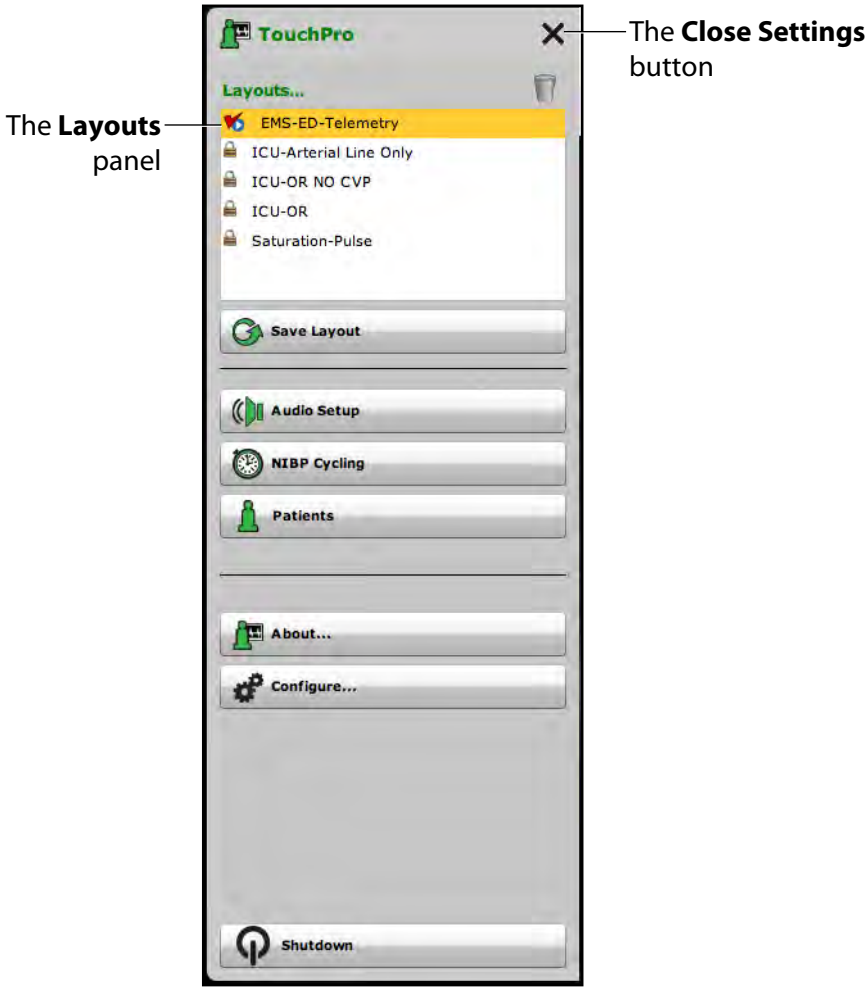
EMS-ED-Telemetry - preconfigured with a waveform and numeric readout for ECG Lead II and numeric readouts for SpO_2 and noninvasive blood pressure (NIBP).

ICU-OR No CVP - preconfigured with waveform and numeric readouts for ECG Lead II, ECG Lead V, ABP, PAP and Pleth, and numeric readouts for NIBP, Thermodilution C.O., Blood Temperature and Body Temperature.

ICU-OR - preconfigured with waveform and numeric readouts for ECG Lead II, ECG Lead V, ABP, PAP, CVP and Pleth, and numeric readouts for NIBP, Thermodilution C.O., Blood Temperature and Body Temperature.

Saturation-Pulse - preconfigured with numeric readouts for SpO_2 and pulse.

To select a preconfigured layout, click **Settings**, select the layout from the Layouts panel and click the **Close Settings** button.



The TouchPro Settings Menu

NOTE: Preconfigured layouts must be enabled in the Müse TouchPro Setup for the currently running SCE to be accessible in the Layouts panel..

For more infomation about enabling preconfigured layouts, see *Modifying the TouchPro Setup on page 89*.

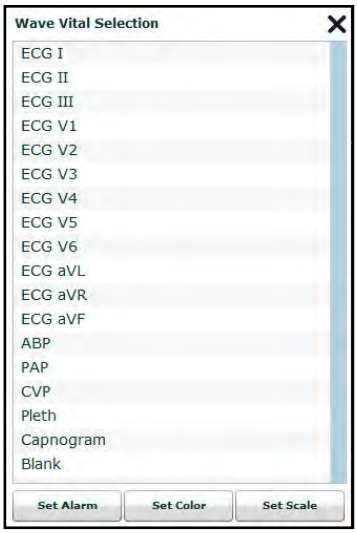
Changing a Waveform or Numeric Display

Waveforms and numeric displays can be changed to suit the user's needs.

To change a waveform or numeric display:

1. Click the waveform or numeric to be changed.

   The Wave Vital Selection menu or the Numeric Vital Selection menu appears, displaying all the available waveforms or numerics.



The Wave Vital Selection Menu

2. Select the desired waveform or numeric.

   The new waveform or numeric is reflected on the screen.

From the **Wave Vital Selection** menu, the alarm, color and scale can be set for the waveform using the **Set Alarm**, **Set Color** and **Set Scale** buttons. From the **Numeric Vital Selection** menu, the color and alarm for the numeric can also be established using the **Set Color** and **Set Alarm** buttons.

Adding a Waveform

The TouchPro software supports up to six waveforms.

To add a waveform:

1. Click the **Settings** button in the bottom right corner of the TouchPro display.

The Settings Button

The Settings menu opens and the **Add Waveform** and **Remove Waveform** buttons appear.

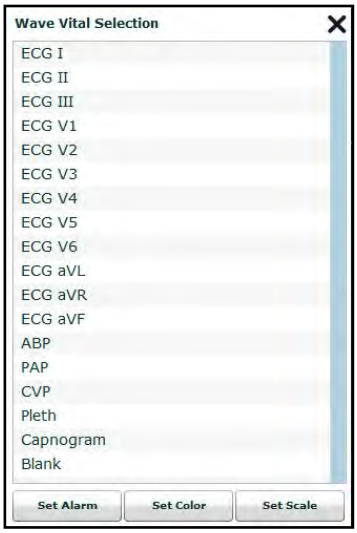
2. Click the plus button in the location above which you want the empty waveform to appear.

   An empty waveform field appears.

The TouchPro Display Settings

3. Click the empty waveform field.

   The Wave Vital Selection menu appears.



The Wave Vital Selection Menu

4. Select the desired waveform from the Wave Vital Selection menu.

   The new waveform is reflected on the screen.

Adding a Numeric Display

The TouchPro software contains four numeric display fields. All four numeric display fields are located on one row beneath the waveform displays.

When fewer than four numeric readouts are being displayed, the remaining fields are blank.

To add a numeric to a blank display field:

1. Click a blank numeric display field.

The TouchPro Display

The Numeric Vital Selection menu appears.

The Numeric Vital Selection Menu

2. Select the desired numeric.

   The new numeric vital display is reflected on the screen.

Moving a Waveform or Numeric Display

Waveforms and numerics can be moved on the screen to suit the user's needs.

To move a waveform or numeric, click the desired waveform or numeric and drag and drop the display to a desired location.

The TouchPro Display

Saving a Layout

Once a layout has been configured, it can be saved and reused.

To save a layout:

1. Ensure the desired waveforms and numerics are in place.
2. Click **Settings**.

   The Settings menu appears.
3. Click **Save As**.

   The Save Layout window appears.
4. In the Save Layout window, in the **Layout Name** field, enter a name for the layout

The Save Layout Window

5. Click **Save.**
6. Click the **Close** button to exit the Settings menu.

Saved layouts can be deleted from the Settings menu by dragging and dropping them in the Trash.

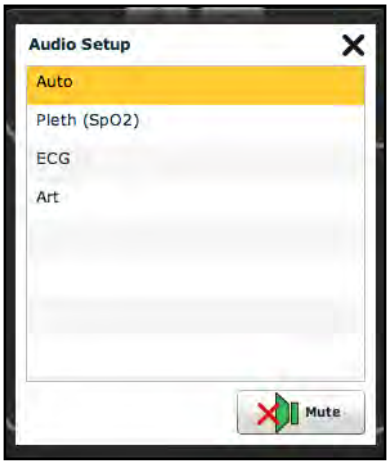
NOTE: When a layout is saved, it is available for use only with the current SCE. To enable the layout for use with any other SCE, enable the layout from the TouchPro Setup panel for the desired SCE.

Sounds

All sounds can be silenced by clicking the **Mute** button in the bottom left corner of the TouchPro display.

The Mute Button

To set up the audio for the TouchPro, from the Settings menu, click **Audio Setup**.



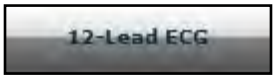
The Audio Setup Menu

From the Audio Setup window, select a waveform to set it as the pulse sound. Once a waveform is selected, the Audio Setup window automatically closes.

Clicking the **Mute** button from the Audio Setup window mutes all alarms. Click the **Mute** button again to return the alarms to their original state.

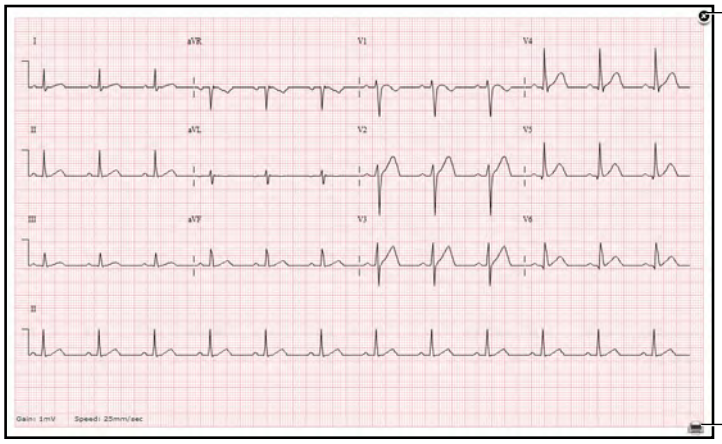
12-Lead ECG

To view a 12-lead ECG report, click the **12-Lead ECG** button at the bottom of the TouchPro screen.



The 12-Lead ECG Button

The report appears.



A 12-Lead ECG Report

The report can be printed or saved by clicking the **Print** button in the bottom right corner of the 12-lead ECG report.

To close the report, click the **Close** button.

IMPORTANT: Prior to saving the report as a PDF or printing to a network printer, the print presets must be adjusted. The page orientation must be set to Landscape and the margins must be set to .25 inches on all sides. These settings vary in location depending on the operating system (i.e., Macintosh or Windows).

To save the report to a PDF file on a Macintosh Instructor Workstation:

1. From the 12-lead ECG report screen, click the **Print** button located in the bottom right corner of the 12-lead ECG report.
2. Select the Save As PDF option.
3. The report saves as a PDF on the Macintosh Instructor Workstation.

To save the report to a PDF file on a Windows Instructor Workstation:

1. From the 12-lead ECG report screen, click the **Print** button located in the bottom right corner of the 12-lead ECG report.

   The Print dialog box appears.

2. From the drop-down menu, select Microsoft XPS Document Writer.
3. The report saves on the Windows Instructor Workstation.

To print a report:

1. From the 12-lead ECG report screen, click the **Print** button located in the bottom right corner of the 12-lead ECG report.
2. Select the appropriate network printer.

   NOTE: A network printer must be configured in order to appear as an option.

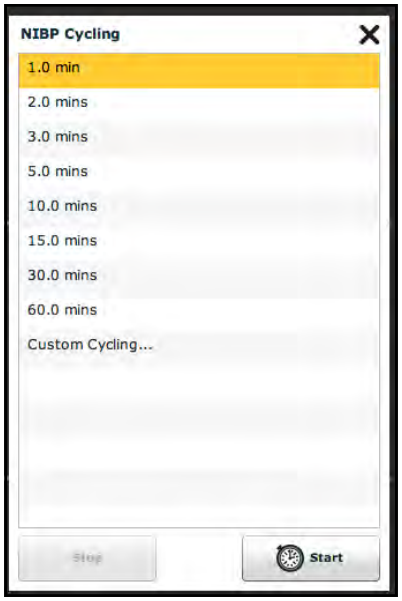
3. Click the **Print** button.

   The report prints to the designated network printer.

NIBP Cycling and Manual NIBP

When non-invasive blood pressure (NIBP) is displayed, the patient's NIBP can be updated at specified intervals using NIBP Cycling, or the current NIBP can be displayed immediately using the **Manual NIBP** button.

To set the patient's NIBP to be updated at regular intervals, from the Settings menu, click **NIBP Cycling**. The NIBP Cycling menu appears. From the NIBP Cycling menu, select the desired interval for the cycling and click **Start**.



The NIBP Cycling Menu

Custom cycling is also available.

To display the patient's current NIBP, click the **Manual NIBP** button.

The TouchPro Display

The current NIBP is displayed.

NOTE: Manual NIBP can be used at any time during cycling. However, this turns off auto-cycling.

Patients

To view the available Patients, click the **Settings** button in the lower right corner of the TouchPro screen. The Settings menu appears. From the Settings menu, click **Patients** to view the current Patient.

The Available Patients

NOTE: When connected to the simulator, the TouchPro only displays the active Patient.

Configuring the TouchPro Software

The background color and alarm suspension time can be set from the TouchPro Configure panel.

To access the Configure panel:

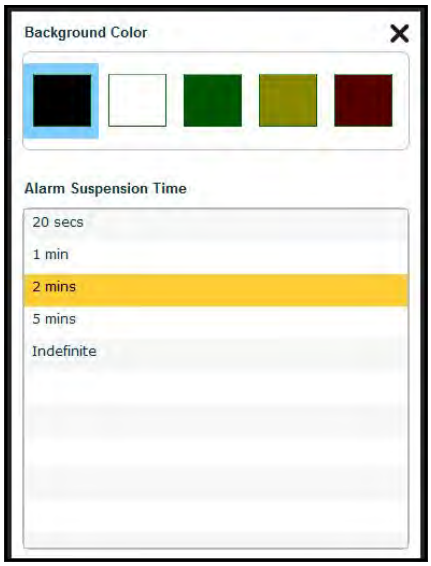
1. Click the **Settings** button in the bottom, right corner of the TouchPro screen.

   The Settings menu appears.

2. From the Settings menu, click the **Configure** button.

   The Configure panel appears.

3. From the Configure panel, set the background color and alarm suspension time.



The Configure Panel

4. Click the **Exit** button to exit the Configure panel when finished.

Changing the TouchPro Language

To change the language of the TouchPro software:

1. Click the **Settings** button in the bottom, right corner of the TouchPro screen.

   The Settings menu appears.

2. From the Settings menu, click the **Language Selection** button.

   The Language Selection panel appears.

3. From the Language Selection panel, select a language.

The Language Selection Panel

4. Click **Accept**.

   The TouchPro software changes to the selected language.

Exiting the TouchPro Software

To exit TouchPro:

1. Click the **Settings** button from the bottom, right corner of the TouchPro screen.

   The Settings menu appears.

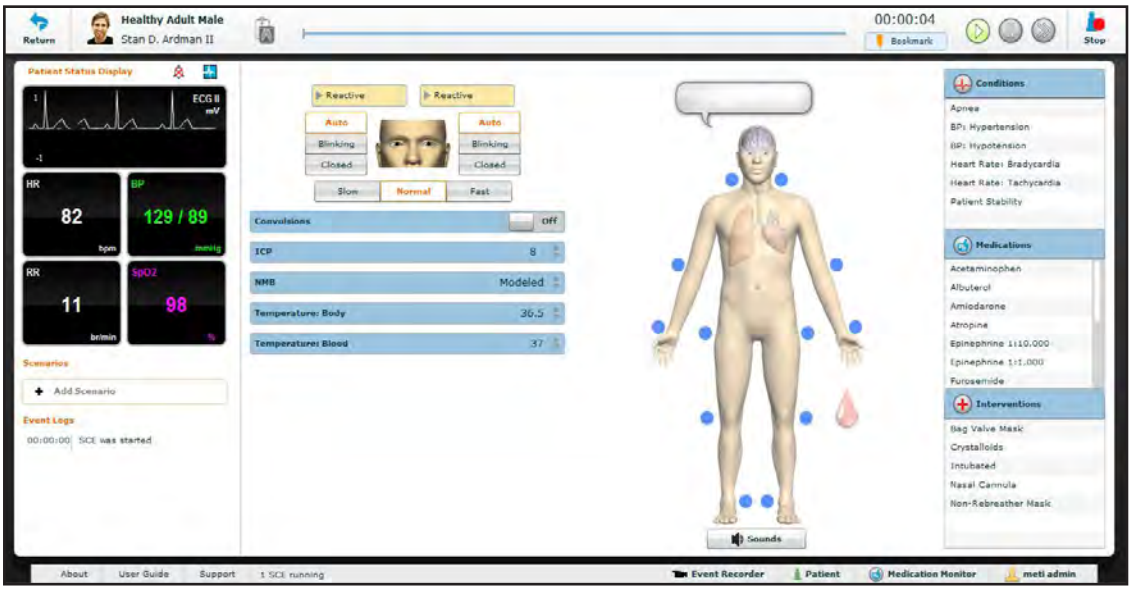
2. From the Settings menu, click **Shutdown**. A warning box appears asking if you want to exit.

3. Click **Shutdown**.

   TouchPro shuts down and the Müse Start Screen appears.

Using METIman

Once METIman has been set up (see the Setup section) and the software has been launched (see the Using the Software section), the simulator is ready for learner interventions.
The features of METIman are broken down by Neurological, Respiratory, Cardiovascular, Gastrointestinal and Genitourinary systems.

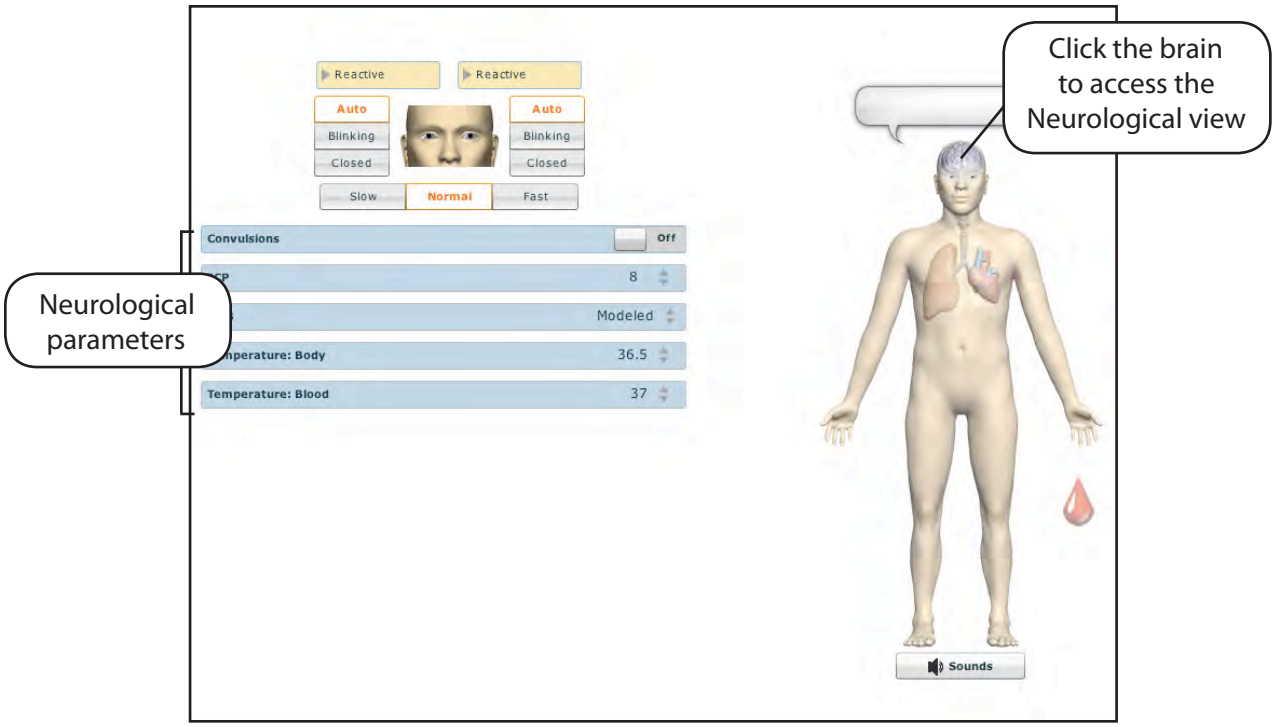


The Run Screen

Neurological

The clinical features that can be controlled from the Neurological Assessment view are Blinking Eyes, Reactive Pupils, Convulsions, Neuromuscular Block, Body and Blood Temperature and Speech.

To access the Neurological view, from the Run screen, click the brain on the human form.



The Neurological View

Eyes

The pupil diameter, pupil reactivity, blinking and blink speed of the simulator's eyes can be controlled from the software.

Click the **Reactive** drop-down menus of each eye to determine reactivity: Reactive, Non-Reactive, Pinpoint or Blown.

Click **Auto** to have the eyes blink while the patient is conscious. Click **Closed** to close the eyes. Click **Blinking** to force the eyes to be open and blinking regardless of patient consciousness. These features can be controlled on both eyes.

Click **Slow**, **Normal** or **Fast** to control the blink speed.

Convulsions

METIman simulates convulsions when the feature is activated on the software. To activate the Convulsions feature, click the **Convulsions** switch. The Convulsions feature is activated when **On** appears. To deactivate the convulsions feature, click the switch again. The feature is deactivated when **Off** appears.

Neuromuscular Blockade

To manually adjust the Neuromuscular Blockade (NMB: Set), click **NMB**. The **NMB** slider appears. Set the percentage by dragging the arrow up or down. Click **Accept** to exit and save the changes.

Body Temperature

To control a patient's body temperature, click **Temperature: Body**. The Body Temperature slider appears. Set the body temperature by dragging the arrow up or down. Click **Accept** to exit and save the changes.

Blood Temperature

To manually control a patient's blood temperature, click **Temperature: Blood**. The Blood Temperature slider appears. Set the temperature by dragging the arrow up or down. Click **Accept** to exit and save the changes.

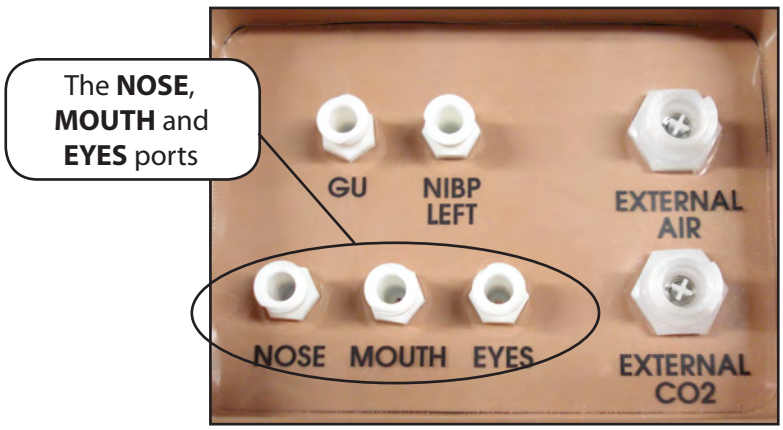
Head Secretions (Prehospital Only)

Secretions of the eyes, nose and mouth are manually controlled with a gravity feed.

NOTE: An IV bag is needed for each site in use.

To use the head secretion features:

1. Using a 60 mL syringe, prime the line of the desired secretion by injecting fluid into the **NOSE**, **MOUTH** or **EYES** port on METIman's left shoulder until fluid emerges from the secretion sites.
2. Set up the IV pole near the simulator.
3. Fill an IV bag with the clinically appropriate fluid. Use distilled water only, with food coloring, if desired.
4. Hang the IV bag on the IV pole.
5. Ensure the roller clamp is closed and insert the IV spike into the IV bag.
6. Connect to the simulator by attaching the end of the IV spike set tubing to the **NOSE**, **MOUTH** or **EYES** port on the simulator's left shoulder. (Repeat for each site necessary.)



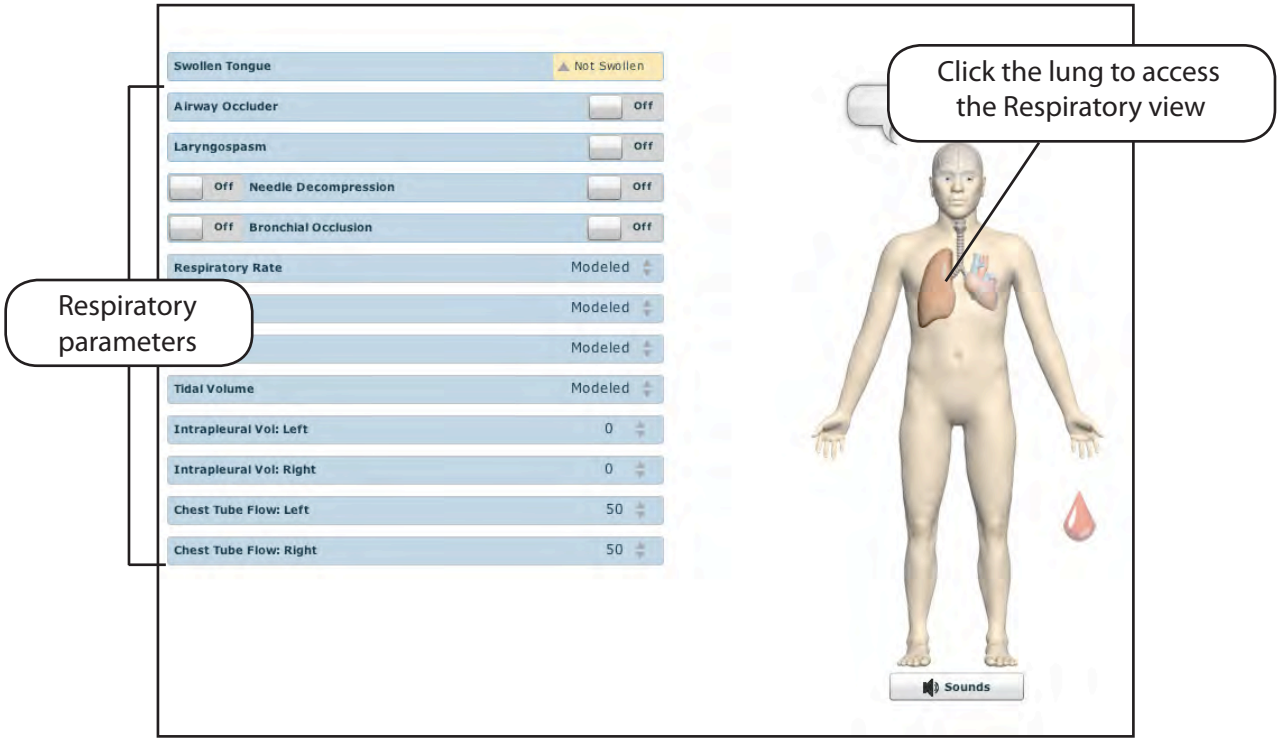
METIman Prehospital's Left Shoulder

7. Open the clamp and allow fluid to flow into the simulator.
8. Keep the IV bag attached. Adjust the flow rate manually using the roller clamp.

NOTE: Cleanup is very important when using simulated fluids. *Please refer to the Care and Maintenance section for directions on fluid removal.*

Respiratory

METIman Prehospital's Respiratory system is comprised of the airway management, spontaneous breathing and ventilation features. On METIman Nursing, various clinical signs such as breath sounds, chest excursion and airway patency can be physically demonstrated. A series of speakers inside each simulator can generate a range of breath and throat sounds used in diagnosing conditions. To access the Respiratory parameters of METIman, on the Run screen, click the lung on the human form. The respiratory parameters appear on the Run screen.



The Respiratory View

Airway

Various clinical signs such as breath sounds, chest excursion and airway patency can be physically demonstrated. A series of speakers inside the simulator can generate a range of breath and throat sounds used in diagnosing conditions.

METIman Prehospital's anatomically realistic upper airway provides for the opportunity to intubate the patient as well as apply other airway interventions. In addition, the METIman Prehospital airway was designed to be a difficult airway that teaches learners to use the best technique when encountering clinical situations with real patients. The airway is best visualized when using the Sellick maneuver, which is performed when a patient is undergoing the intubation procedure.

The METIman Nursing airway has the ability to produce secretions to allow for suctioning.

Airway Features			
Anatomy, Physiology and Clinical Signs	**Clinical Interventions, Patient Monitoring and Scenarios.**	**Software Control**	**Manual Control**
Realistic Upper Airway (Oropharynx, Nasopharynx and Larynx) ***(Prehospital only)***	Allows direct laryngoscopy, oral and nasal intubation and use of specialty airway devices. Simulator detects and responds appropriately to right mainstem intubation. Endobronchial intubation results in unilateral chest excursion and breath sounds.	None required.	None required.
Trachea, Left and Right Mainstem Bronchi ***(Prehospital only)***	Tracheal intubation results in bilateral chest excursion and breath sounds.	None required.	None required.
Airway Management and Ventilation	Alveolar and arterial gas concentrations appropriately reflect the efficacy of ventilation and oxygen administration.	Oxygen administration input by the instructor. VIEW: **Respiratory**	None required.
Gastric Distention ***(Prehospital only)***	Esophageal intubation results in gastric distension and the absence of breath sounds, chest excursion and CO_2 output.	None required.	None required.
Breakaway Teeth ***(Prehospital only)***	Upper front teeth can be dislodged if laryngoscopy is performed incorrectly.	None required.	*See Breakaway Teeth*
Tongue Edema (On/Off)	Hinders, but does not prevent, intubation.	VIEW: **Respiratory**	None required.
Posterior Pharynx Swelling ***(Prehospital only)***	Obstructs view of larynx to prevent intubation, but allows mask ventilation "can't intubate, can ventilate" scenario.	VIEW: **Respiratory**	None required.
Laryngospasm ***(Prehospital only)***	Closes vocal cords and prevents intubation and ventilation. When used with posterior pharynx swelling, creates a "can't intubate, can't ventilate" scenario.	VIEW: **Respiratory**	None required.
Cricothyroid Membrane	Allows needle cricothyrotomy, transtracheal jet ventilation, retrograde wire techniques and cricothyrotomy.	None required.	*See Cricothyrotomy*,

Swollen Tongue

The swollen tongue feature is activated on the Respiratory view by setting the **Swollen Tongue** switch to **Swollen**.

Posterior Pharynx Swelling (Prehospital Only)

Swelling of the posterior oropharynx (posterior airway occlusion) can be activated to obstruct the view of the larynx and prevent intubation, but allow mask ventilation of the patient's lungs, thereby creating a "cannot intubate, can ventilate" scenario. Click the **Airway Occluder** switch to activate the feature.

Realistic Upper Airway (Prehospital Only)

The upper airway of METIman Prehospital is designed to allow for intubation and laryngoscopy. Oral and nasal intubation can be performed using a variety of airway devices, including LMAs, endotracheal tubes, nasal-pharyngeal airways and oropharyngeal airways. *For supported sizes, see Recommended Clinical Supply Sizes on page 221*.

Intubation

The simulator detects and responds appropriately to right mainstem intubation, and an event is recorded in the Event Log.

Intubation incorrectly applied into the esophagus causes abdominal distension.

IMPORTANT

Airways can be damaged by improper insertion of an airway adjunct (e.g. endotracheal tube). To protect the airway, lubricate the adjunct prior to insertion using the silicone spray provided.

Use ONLY the provided SILICONE SPRAY to lubricate the adjunct. NEVER use a water-based lubricant because of resulting residue damage.

Laryngospasm (Prehospital Only)

A laryngospasm actuator closes the patient's vocal cords and prevents both ventilation and intubation. Click the **Laryngospasm** switch to activate the feature.

Teeth with Breakaway Incisors (Prehospital Only)

METIman Prehospital is equipped with Breakaway Teeth whose front incisors become dislodged with improper handling of a laryngoscope.

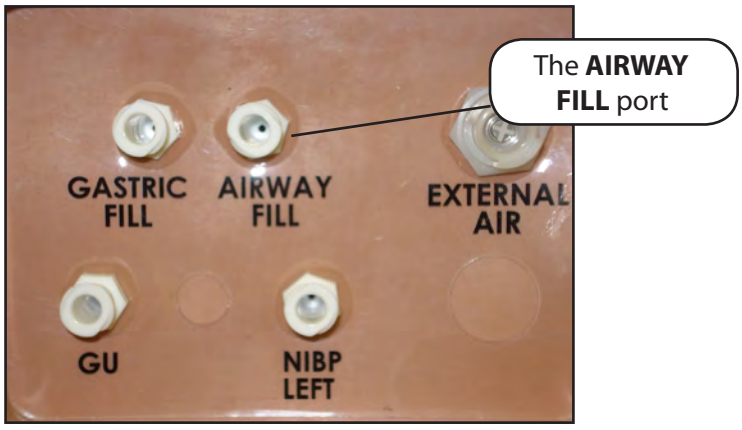
The teeth are tied to the upper denture with a lanyard, which prevents losing the teeth down the airway or misplacing them during storage.

Airway Secretions (Nursing Only)

METIman Nursing allows for suctioning of fluids from the airway using a manual feed. Ensure all fluids have been removed from previous uses before each new use to prevent overfilling.

Tracheostomy Suction

To use the airway secretion feature, inject up to 40 mL of clinically appropriate colored fluid into the **AIRWAY FILL** port on METIman Nursing's left shoulder.



METIman Nursing's Left Shoulder

The trachea is now ready to be suctioned. Using the proper clinical technique, insert the suction catheter until resistance is encountered at the bifurcation. *For supported catheter size, see Recommended Clinical Supply Sizes on page 221.*

Withdraw and apply suction. Fluid can be suctioned over a distance of approximately 4 cm distal to the bifurcation.

NOTE: Use only distilled water with food coloring, if desired.

NOTE: Cleanup is very important when using simulated fluids. *Please refer to the Care and Maintenance section for directions on fluid removal.*

Cricothyrotomy

Cricothyrotomy can be simulated on METIman. Before performing a needle cricothyrotomy, the Cricothyrotomy plug must be removed, and a 2.25-inch (6-cm) length of red tape from the roll provided must be placed over the hole.

To replicate a needle cricothyrotomy:

1. Spray the silicone lubricant onto the airway adjunct prior to the simulation session. To prevent damage to the simulator, always spray silicone lubricant into the airway.
2. Locate the simulated cricothyroid membrane sealed with tape underneath the neck skin.
3. Follow standard clinical techniques and palpate to find the cricothyroid space.
4. Puncture the space through the neck skin of the patient simulator and into the tape "membrane." This puncture goes all the way through to the "trachea," simulating the clinical procedure.
5. Users must replace the tape that simulates the cricothyroid membrane after each cricothyrotomy.

NOTE: Replacement components are available in the Inventory Kit.

NOTE: When ventilating through a surgical airway, the Laryngospasm feature must be deactivated, or the chest rise is not observed.

NOTE: When finished using the Cricothyrotomy feature, replace the Crichothyrotomy plug.

Replacing the Cricothyrotomy Tape

Remove the old, punctured tape completely from the cricoid feature and use alcohol to clean the glue residue from the surface. (An alcohol prep pad works well.) Allow to dry.

Cut an approximately 2.25-inch (6 cm) length of the double-sided tape from the roll provided.

Carefully remove the paper backing and lightly stretch the newly revealed adhesive side of the tape over the cricoid hole and down the far side of the cricoid feature. Use the non-stick paper backing to press the tape against the cricoid feature.

Cut a 2.5-inch to 3-inch (7 cm to 8 cm) length of red tape and apply it over the cricoid feature and the tape.

Resealing the Membrane After a Puncture

To reseal the cricoid feature, apply a small piece of red tape over the punctured area. This can be repeated a brief number of times, but when the number of layers impedes the cricothyrotomy, all existing tape must be removed and replaced with new tape.

Pulmonary

METIman uses both physical and mathematical models to achieve an extremely accurate simulation of respiration. METIman's chest rises and falls, mimicking inspiration and expiration. METIman Prehospital's lungs also react realistically to intubation as well as to pathophysiologic states.

Pulmonary System			
Anatomy, Physiology and Clinical Signs	**Clinical Interventions, Patient Monitoring and Scenarios.**	**Software Control**	**Manual Control**
Spontaneous Breathing	Normal tidal breathing and pathophysiological conditions such as atelectasis, pneumothorax, asthma and COPD.	None required, but adjustable VIEW: **Respiratory**	None required.
Exhaled CO_2 ***(Prehospital only)***	Measure the presence or absence of CO_2 during positive pressure ventilation.	None required.	CO_2 canister is inserted
Pneumothorax or Hemothorax	Increase in intrapleural volume, leading to asymmetrical breathing.	None required, but adjustable VIEW: **Respiratory** CONTROL: **Intrapleural Volume (Left or Right)**	None required.
Chest Excursion	Synchronized with ventilation (spontaneous or positive pressure ventilation). Excursion depth proportional to tidal volume.	None required.	None required.
Breath Sounds	Normal and abnormal breath sounds are independently synchronized with ventilation of the right and left lungs. Breath sounds can be auscultated over anterior and posterior anatomic locations.	None required, but adjustable VIEW: **Sounds**	None required.
Bronchial Occlusion	Completely obstructs right and/or left mainstem bronchi, simulating a lower airway obstruction (e.g. mucus plug). This yields an inability to ventilate the lungs and asymmetric chest excursion.	VIEW: **Respiratory**	None required.
Pulse Oximetry	Oxyhemoglobin saturation (SpO_2) automatically correlates with the oxygen concentration in the lungs and the intrapulmonary shunt fraction.	None required, but adjustable	SpO_2 probe is attached.
Arterial Blood Gases	PaO_2, $PaCO_2$ and pH are continuously calculated, and the Patient Status Display can be configured to show them.	None required, but adjustable	None required.
Venous Blood Gases	PvO_2 and $PvCO_2$ are continuously calculated, and the Patient Status Display can be configured to show them.	None required, but adjustable	None required.

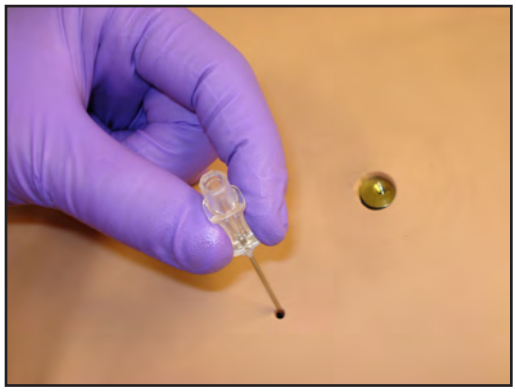
Pulmonary System			
Needle Decompression ***(Prehospital Only)***	Decompression of a pneumothorax can be performed bilaterally by inserting a needle at the midclavicular line of the second intercostal space.	The instructor must adjust the amount of physiologic intrapleural air present. VIEW: **Respiratory** CONTROL: **Needle Decompression, Intrapleural Vol: Left, Intrapleural Vol: Right**	See *Needle Decompression setup,*.

Needle Decompression (Prehospital Only)

Needle decompression can be performed bilaterally into a small hole located in the midclavicular line of the second intercostal space. *For supported needle size, see Recommended Clinical Supply Sizes on page 221*.

To enable the Needle Decompression feature, activate the switch for the appropriate side(s). From the Respiratory view, turn the desired **Needle Decompression** switch to **On**.

Needle Decompression Switch



Needle Decompression

When a needle is inserted in the second intercostal space, along the midclavicular line, air is released while intrapleural volume is present.

Needle Decompression and Chest Tube

When using the METIman Prehospital system, the Needle Decompression and Chest Tube features can be enabled simultaneously. Intrapleural volume will decrease when both are in use.

Bronchial Occlusion (Prehospital Only)

When bronchial occlusion is enabled, unilateral chest excursion is observed during spontaneous breathing or positive pressure ventilation. To stop airflow to the bronchi, creating a bronchial occlusion, the switch for the appropriate side(s) must be activated. From the Respiratory view, turn the desired **Bronchial Occlusion** switch to **On**.

Bronchial Occlusion Switch

Respiratory Rate

To adjust the respiratory rate manually, from the Respiratory view, click **Respiratory Rate**. The Respiratory Rate slider appears. Set the rate by dragging the arrow up or down. Click **Accept** to exit and save the changes. The switch is now orange, indicating a change has been made. To return to the programmed physiologic model, click the switch and turn the **Override** switch to **Modeled**.

Respiratory Rate Parameter

Pulse Oximetry

To adjust the SpO_2 percentage manually, from the Respiratory view, click **SpO_2**. The SpO_2 slider appears. Set the rate by dragging the arrow up or down. Click **Accept** to exit and save the changes. The switch is now orange, indicating a change has been made. To return to the programmed physiologic model, click the switch and turn the **Override** switch to **Modeled**.

SPO2 Parameter

The SpO_2 probe is integrated with the TouchPro (optional) and the physiological model. The connection for the SpO_2 probe is located on the left side of the simulator. The SpO_2 probe must be connected for pulse oximetry data to be displayed.

CO_2 Exhalation (Prehospital Only)

Whether supplied via a portable canister or from an external source, the simulator exhales CO_2 during positive pressure ventilation.

NOTE: An optional regulator kit must be purchased to use CO_2 from an external source.

To use the CO_2 Exhalation feature, connect the CO_2 canister to the CO_2 canister socket or connect the external source on the simulator's right shoulder, and METIman Prehospital exhales CO_2 gas. There are approximately 15 minutes of CO_2 gas available once the canister is connected.

Positive Pressure Ventilation

When positive pressure ventilation is administered, the process is automatically detected by the simulator, and the physiologic model is sensitive to the volume administered.

Gastric Distention (Prehospital Only)

During esophageal intubation or overly aggressive bag valve mask ventilation, gastric distention occurs. Gastric distention is relieved by putting pressure on the abdomen.

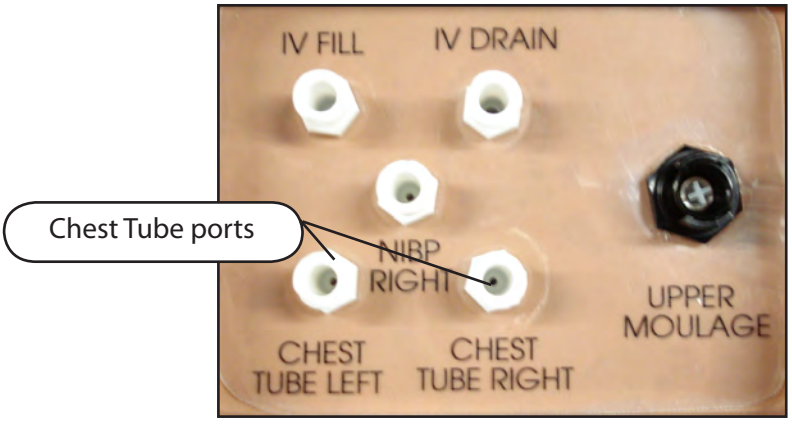
Chest Tube: METIman Prehospital

METIman Prehospital has the ability to simulate chest tube drainage. The Chest Tube sites are located bilaterally in the fifth intercostal space. *For supported chest tube size, see Recommended Clinical Supply Sizes on page 221*.

Ensure all fluids have been removed from previous uses before each new use to prevent overfilling. *Please refer to the Care and Maintenance section for directions on fluid removal.*

To simulate continuous chest tube drainage:

1. Insert the METIman Priming Tube in the Chest Tube site.
2. Set up the IV pole near the simulator.
3. Fill an IV bag with the clinically appropriate fluid. Use distilled water only, with food coloring if desired.
4. Hang the IV bag on the IV pole.
5. Ensure the roller clamp is closed and insert the IV spike into the IV bag.
6. Connect to the simulator by attaching the end of the IV spike set tubing to the corresponding **CHEST TUBE** port (**LEFT or RIGHT**) on the simulator's right shoulder.

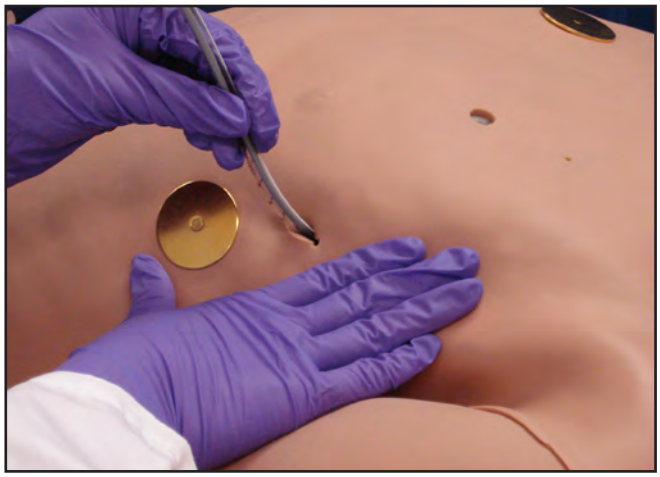


METIman's Right Shoulder

7. Open the clamp and allow fluid to flow into the simulator until fluid is seen in the METIman Priming Tube.

8. Once fluid appears in the METIman Priming Tube, remove the METIman Priming Tube. The simulator is ready for chest tube insertion.
9. Keep the IV bag attached and adjust the flow rate manually using the roller clamp.

The chest tube must be fully inserted for the fluid to flow.



Chest Tube Insertion

NOTE: Cleanup is very important when using simulated fluids. *Please refer to the Care and Maintenance section for directions on fluid removal.*

When the Chest Tube feature is used on METIman Prehospital, the simulator automatically detects the tube insertion and creates a log entry.

On METIman Prehospital, if a small volume of fluid is needed to simulate proper chest tube insertion, the internal reservoir may be filled.

To insert a small amount of fluid into the Chest Tube reservoir:

1. Insert the METIman Priming Tube in the Chest Tube site.
2. Using a 60 mL syringe filled with clinically appropriate fluids, inject the contents into the **CHEST TUBE** port **(LEFT or RIGHT)** until fluid is seen in the METIman Priming Tube. Use distilled water only, with food coloring, if desired.
3. Remove the METIman Priming Tube.
4. Inject the remaining contents of the syringe into the **CHEST TUBE** port.
5. Remove the syringe.

Chest Tube and Needle Decompression

The Chest Tube and Needle Decompression features can be enabled at the same time on the METIman Prehospital system. Intrapleural volume will decrease when both are in use.

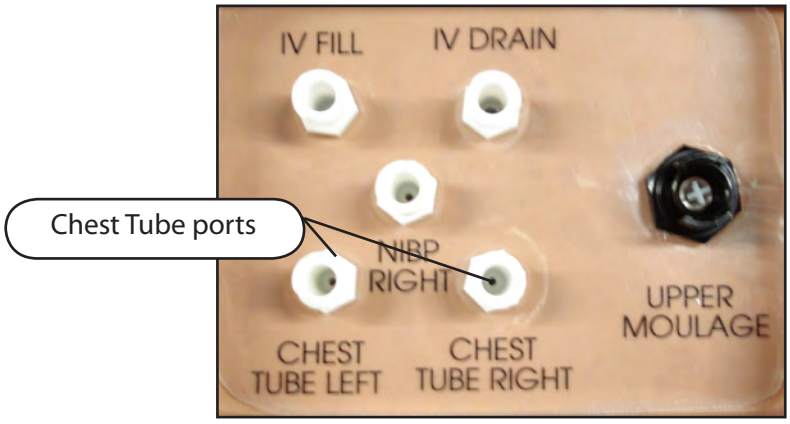
Chest Tube: METIman Nursing

METIman Nursing has the ability to simulate chest tube drainage. The Chest Tube sites are located bilaterally in the fifth intercostal space. *For supported chest tube size, see Recommended Clinical Supply Sizes on page 221*.

Ensure all fluids have been removed from previous uses before each new use to prevent overfilling. *Please refer to the Care and Maintenance section for directions on fluid removal*.

To simulate continuous chest tube drainage:

1. Insert the METIman Priming Tube in the Chest Tube site.
2. Set up the IV pole near the simulator.
3. Fill an IV bag with the clinically appropriate fluid. Use distilled water only, with food coloring if desired.
4. Hang the IV bag on the IV pole.
5. Ensure the roller clamp is closed and insert the IV spike into the IV bag.
6. Connect to the simulator by attaching the end of the IV spike set tubing to the corresponding **CHEST TUBE** port (**LEFT or RIGHT**) on the simulator's right shoulder.



METIman's Right Shoulder

7. Open the clamp and allow fluid to flow into the simulator until fluid is seen in the METIman Priming Tube.
8. Once fluid appears in the METIman Priming Tube, remove the METIman Priming Tube. The simulator is ready for chest tube insertion.
9. Keep the IV bag attached and adjust the flow rate manually using the roller clamp.

The chest tube must be fully inserted for the fluid to flow.

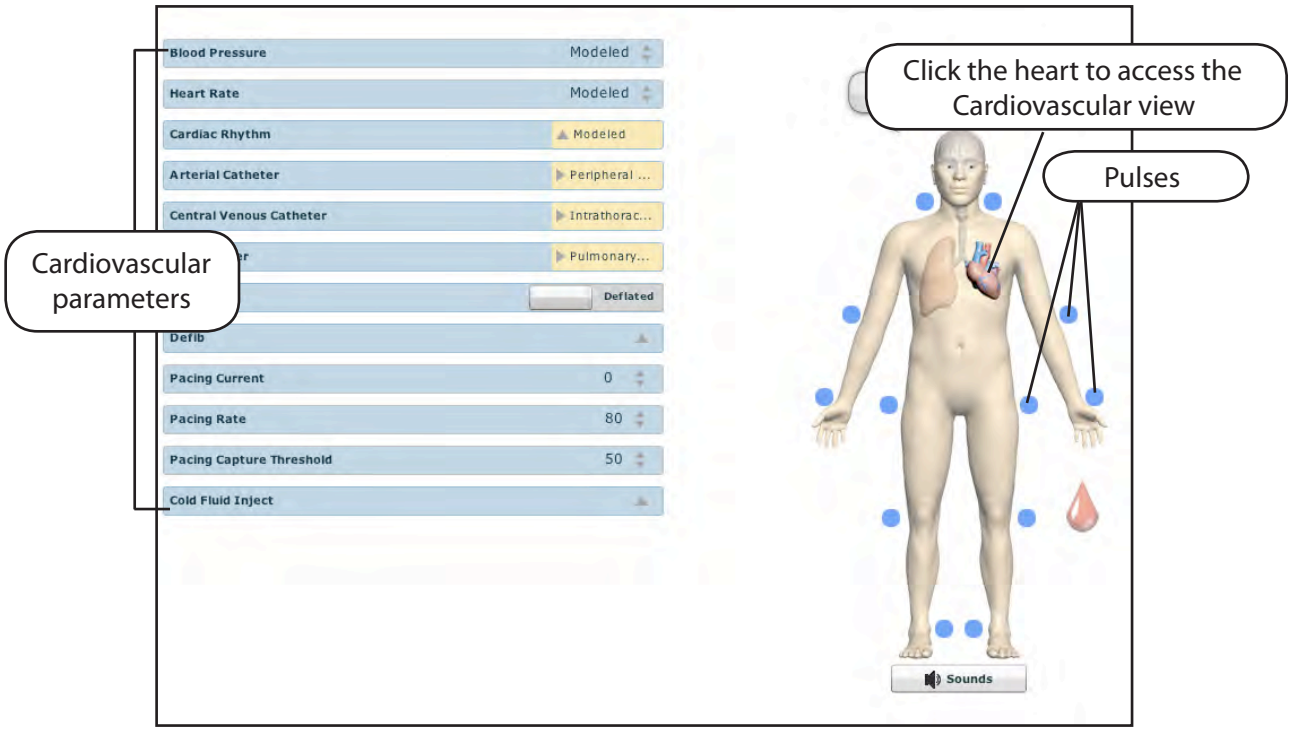
NOTE: Cleanup is very important when using simulated fluids. *Please refer to the Care and Maintenance section for directions on fluid removal*.

Cardiovascular

With METIman's Cardiovascular system, users can replicate the clinical signs associated with cardiac activity, including palpable pulses, heart sounds and electrical activity.

Cardiovascular System			
Anatomy, Physiology and Clinical Signs	**Clinical Interventions, Patient Monitoring and Scenarios.**	**Software Control**	**Manual Control**
Heart Sounds	Normal and abnormal heart sounds are synchronized to the cardiac cycle and audible to a standard stethoscope. Heart sounds can be auscultated over the left and right upper sternal border, right lower sternal border and apex.	None required; specific sounds can be selected. VIEW: **Cardiovascular**	None required.
5-Lead ECG	ECG waveforms can be viewed on a standard monitor and/or on the TouchPro Patient monitor. Normal and abnormal cardiac rhythms are linked to patient physiology (e.g. blood pressure, cardiac output).	None required; specific rhythms can be selected.	ECG monitor may be utilized.
Myocardial Ischemia	Myocardial oxygen supply and demand automatically influence the cardiac rhythm, yielding response to hypoxemia.	None required, but adjustable.	None required.
Palpable Pulses	Carotid, brachial, radial, femoral, popliteal, posterior tibial and dorsalis pedis pulses can be palpated bilaterally and are synchronous with the cardiac cycle. A pulse deficit automatically occurs if the systolic arterial blood pressure falls below specified thresholds.	None required, but adjustable. VIEW: **Available on all views on the Run screen**	None required.
Non-Invasive Blood Pressure Measurement	Systemic blood pressure can be measured using the return-to-flow technique. Korotkoff sounds can also be auscultated.	None required.	Use of modified blood pressure cuff.

To access the Cardiovascular parameters of METIman, on the Run screen, click the heart on the human form. The cardiovascular features appear on the Run screen.



The Cardiovascular View (Prehospital)

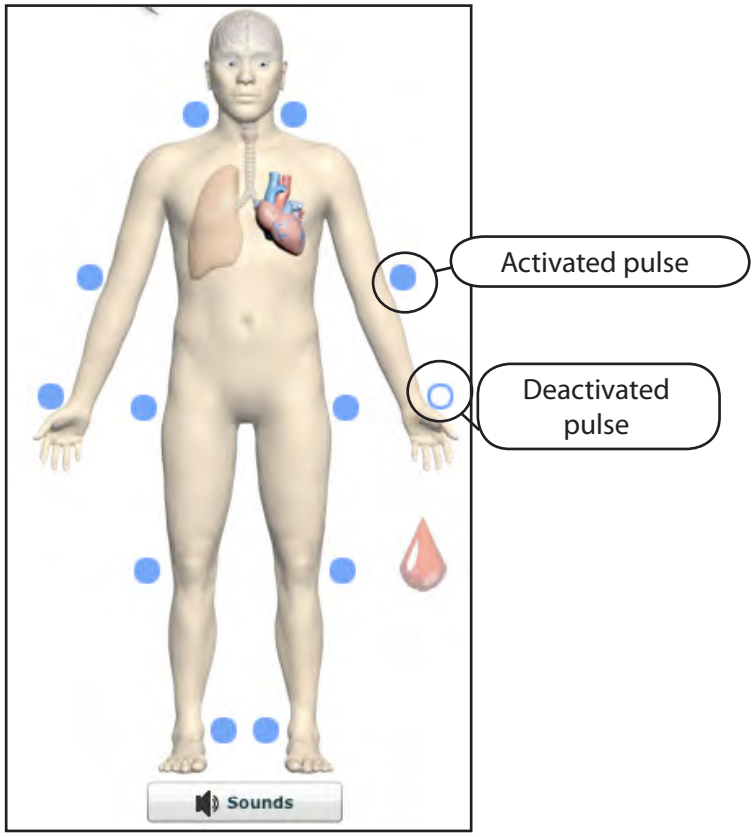
Pulses: METIman Prehospital

METIman Prehospital has 14 pulse sites that are activated by touch.

- Carotid (2)
- Brachial (2)
- Radial (2)
- Femoral (2)
- Popliteal (2)
- Posterior Tibial (2)
- Dorsalis Pedis (2)

NOTE: The Dorsalis Pedis and Posterior Tibial pulses are controlled together. The left and right Carotid pulses are also controlled together.

Pulses are visible and can be controlled from any physiological view. To disable a pulse, click the pulse location on the human form. To enable a pulse, click the pulse location again.



Pulses: METIman Prehospital – Active and Inactive

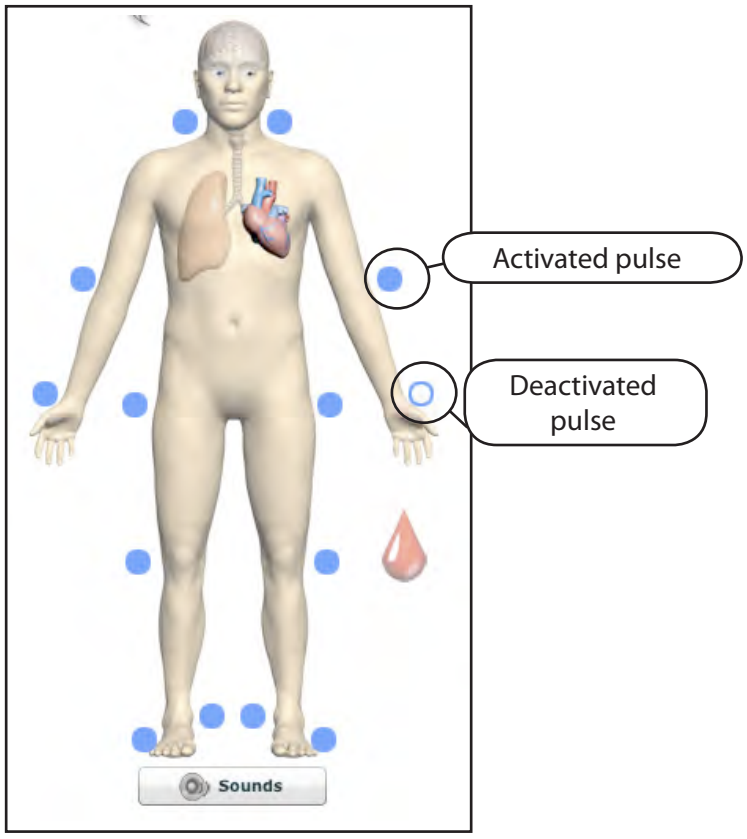
Pulses: METIman Nursing

METIman Nursing has 14 pulse sites that are activated by touch.

- Carotid (2)
- Brachial (2)
- Radial (2)
- Femoral (2)
- Popliteal (2)
- Posterior Tibial (2)
- Dorsalis Pedis (2)

NOTE: The left and right Carotid pulses are controlled together.

Pulses are controlled from the Cardiovascular view only. All pulses, unless altered by an SCE, are enabled by default. To disable a pulse, click the pulse location on the human form. To enable a pulse, click the pulse location again.



Pulses: METIman Nursing – Active and Inactive

Blood Pressure

METIman supports non-invasive blood pressure measurements, and systolic and diastolic readings can be obtained and manipulated through the software.

Systolic and Diastolic Blood Pressure

To manually adjust the systolic and/or diastolic blood pressure:

1. From the Cardiovascular view, click the parameter of desired blood pressure.
2. Set the pressure by dragging the arrow up or down.
3. Click **Accept** to exit and save the changes. The switch is now orange, indicating a change has been made.
4. To return to the programmed physiologic model, click the switch and turn the **Override** switch to **Modeled**.

Non-Invasive Blood Pressure Measurement

Blood pressure can be taken manually on either arm. Non-invasive blood pressure (NIBP) monitoring techniques can be used by attaching the standard cuff modified with a T-fitting and adapters.

To modify a standard blood pressure cuff:

1. Cut the blood pressure cuff tube approximately 9 cm from the cuff.
2. Insert the barbed end tubing connectors into the cut ends of the blood pressure cuff tubes.

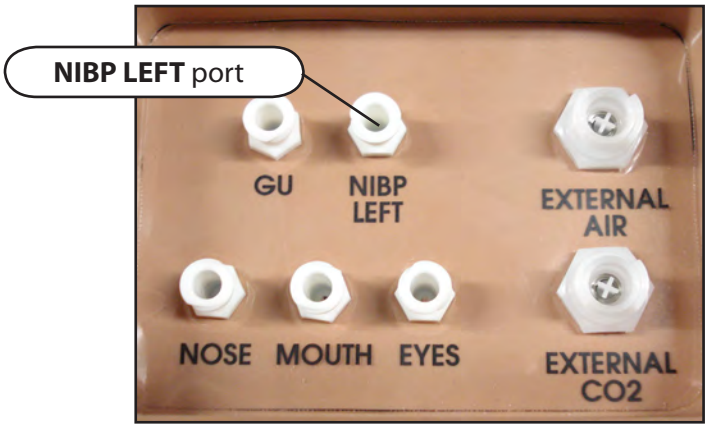
3. Secure the tubing connectors with cable ties.

An Attached Tubing Connector

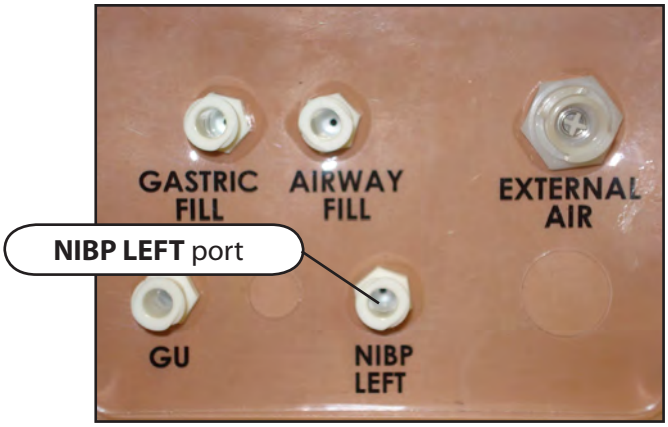
4. Attach the blood pressure adapter to the connectors.

An Attached Blood Pressure Cuff Adapter

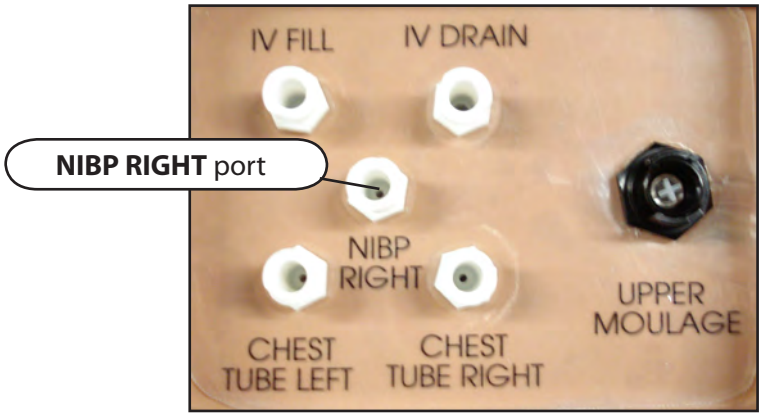
To get a blood pressure reading, connect the extension from the T-fitting on the blood pressure cuff adapter to either of the **NIBP** ports on METIman's left and right shoulders.



METIman Prehospital's Left Shoulder



METIman Nursing's Left Shoulder



METIman's Right Shoulder

Connect the T-fitting extension to the hose.

Take the non-invasive blood pressure reading using the return-to-flow technique.

Attached Blood Pressure Cuff

At appropriate cuff pressures, Korotkoff sounds are produced, and the radial pulse disappears.

Heart Rate

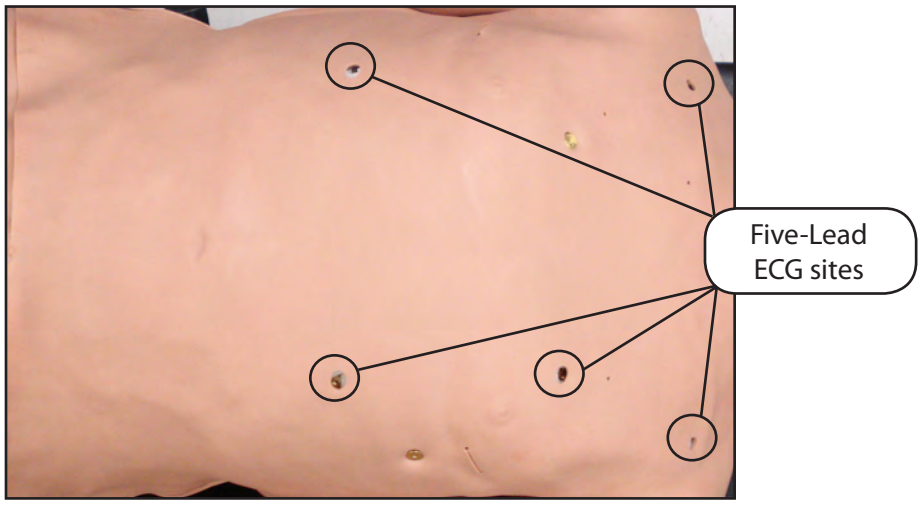
To manually adjust the heart rate, from the Cardiovascular view, click **Heart Rate**. Set the rate by dragging the arrow up or down.

Click **Accept** to exit and save the changes. The switch is now orange, indicating a change has been made.

To return to the programmed physiologic model, click the switch and turn the **Override** switch to **Modeled**.

Five-Lead ECG

On METIman, a 5-lead ECG is emitted from the appropriate positions for display on a standard monitor. A contact is available on METIman's chest for each of the five cables.



5-Lead ECG Sites

The simulator generates a normal sinus ECG, as well as a broad range of abnormalities such as myocardial ischemia, sinus tachycardia and bradycardia, ventricular fibrillation and asystole. The hemodynamic response to the arrhythmias is physiologically correct. Myocardial oxygen balance and cardiac ischemia automatically influence the cardiac rhythm resulting in a realistic and automatic response of the rhythm to hypoxemia. The degree of influence can be controlled or completely overridden by the instructor.

Cardiovascular Interventions/Therapy

METIman can simulate chest compressions and three types of electrical therapy: defibrillation, cardioversion and pacing.

Realistic Cardiovascular Interventions			
Anatomy, Physiology and Clinical Signs	**Clinical Interventions, Patient Monitoring and Scenarios.**	**Software Control**	**Manual Control**
Chest Compression	Effective chest compression results in artificial circulation, cardiac output, central and peripheral blood pressures, palpable pulses, and CO_2 return.	None required, but adjustable.	None required.
Cardiac Monitoring	The desired arrhythmia can be selected.	The response to clinical intervention must be controlled by the instructor. VIEW: **Cardiovascular**	None required.
Defibrillation	METIman supports operation with a variety of manual and automatic external defibrillators.	Defibrillation can be simulated by the instructor under the Interventions palette VIEW: **Cardiovascular**	*See Defibrillation below for defibrillation disk locations and instructions.*
Cardiac Pacing	Transthoracic cardiac pacemaker can be used with METIman. Pacing results in appropriate physiological changes in blood pressure and cardiac output.	None required.	*See Pacing below for cardiac pacing disk locations and instructions.*

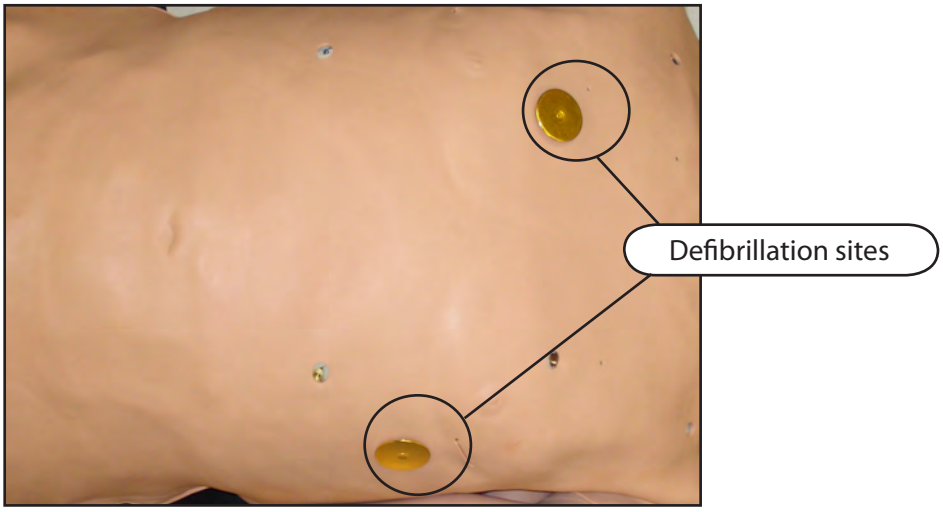
Chest Compressions

METIman supports normal hand placement and standard compression techniques, and chest compressions can be performed. METIman can detect the compressions, and the physiology responds accordingly.

Defibrillation and Cardioversion

Manual defibrillation and cardioversion can be performed on METIman. Additionally, defibrillation and cardioversion are available virtually through the software.

METIman is designed to safely absorb the energy discharged from manual and automatic defibrillators. Standard defibrillation energy levels should be used for positive learning reinforcement and to avoid negative training transfer.



Defibrillation Sites

However, use of a defibrillator for training purposes represents an operational hazard equivalent to use of a defibrillator on a real patient. Consequently, ALL SAFETY PRECAUTIONS for the use of defibrillators MUST BE FOLLOWED as if the simulator were a patient. Consult the specific defibrillator's user manual for further information.

The following cautions should be observed:

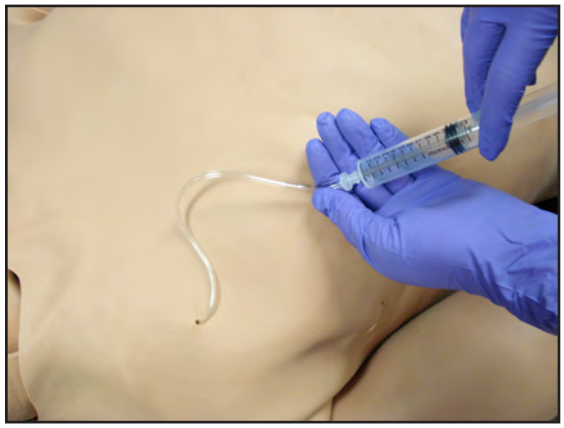
- Defibrillation should be performed on the defibrillation electrodes only. If defibrillation is performed over any ECG electrode, high voltage may be present on the remaining connectors during the shock. This may also damage ECG circuitry.
- To prevent overheating, do NOT provide more than three (3) defibrillator discharges (maximum 200 joules with a biphasic defibrillator) in a sequence. Do NOT exceed an average of two (2) defibrillator discharges per minute during the training session.
- Avoid a large number of consecutive discharges. For example, 20 or 25 discharges without any recovery interval may damage the system.
- Do NOT let the simulator come in contact with electrically conductive surfaces or objects during defibrillation. A flame-supporting atmosphere, for example, with a high content of oxygen, should be avoided during defibrillation.
- Keep the simulator's chest dry. Special attention should be taken when using the urinary system or the chest tube feature.
- To prevent pitting of the chest skin electrode, do NOT apply conductive gel or conductive defibrillation pads intended for patient use.
- Do NOT use cables or connectors having visible damage.
- Do NOT spill fluids over any component inside the simulator torso. This could damage the system and may also present a possible hazard for the operator.
- When using a manual defibrillator, the ECG can be monitored via the defibrillator paddles. Coarse ventricular fibrillation and high-rate ventricular tachycardia cardiac rhythms are automatically recognized as "shockable" rhythms.
- With each defibrillation, the METIman automatically records the amount of energy discharged and the time defibrillation was performed. The simulated patient response to defibrillation is determined by the scenario script or instructor intervention. Thus, cardioversion is not automatically determined by the physiological models.
- The minimum electrical charge recognized by the circuitry within the simulator is 20 joules.
- For paddle placement on the chest, the simulator has two anterior defibrillation disks, which can be unscrewed, leaving threaded connections, if required.
- Biphasic defibrillators can be used with either paddles or hands-free connectors.

Pacing

Pacing can be achieved virtually by selecting the appropriate intervention in the Interventions palette. A standard transthoracic cardiac pacemaker can be connected to the simulator using the anterior contacts. The simulator automatically detects and responds to pacing signals (from 20 mA to 200 mA, in increments of 10).

Subclavian Catheter (Nursing Only)

The Subclavian Catheter feature allows for cleaning and dressing practice. When using the Subclavian Catheter feature, users can infuse up to 50 mL of distilled water in the line.



Subclavian Catheter

NOTE: Cleanup is very important when using simulated fluids. *Please refer to the Care and Maintenance section for directions on fluid removal.*

Intramuscular Injection

METIman allows for the administration of a deltoid intramuscular (IM) injection. Injection sites are located on both of METiman's arms. *For supported needle size, see Recommended Clinical Supply Sizes on page 221*.

Intramuscular Injection

IV Cannulation

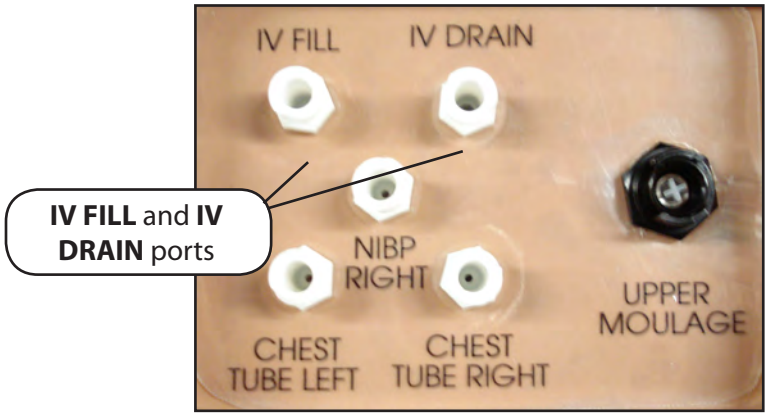
Veins for the IV Cannulation feature are located in the dorsum of the hands, forearms and antecubital region of the arms. *For supported needle size, see Recommended Clinical Supply Sizes on page 221*.

To simulate realistic flashback, the system must be primed prior to use. Ensure all fluids have been removed from previous uses before each new use to prevent overfilling. *Please refer to the Care and Maintenance section for directions on fluid removal.*

IV Cannulation

To prime the IV access ports, connect a 60 mL syringe filled with distilled water (with clinically appropriate food coloring if desired) to the **IV FILL** port on METIman's right shoulder and firmly inject all 60 mL. This primes the arms and charges the system for Flashback and Venipuncture support.

WARNING: If a flash does NOT occur, do NOT inject any fluid and remove the needle immediately. Repeat the priming directions and ensure you have injected the needle properly and into the simulated vein.



METIman's Right Shoulder

Fluids and medications can be administered intravenously. Approximately 50 mL of fluid may be infused. To support infusion of larger volumes, connect an empty IV bag or other receptacle to the **IV DRAIN** port located on METIman right shoulder.

NOTE: Cleanup is very important when using simulated fluids. *Please refer to the Care and Maintenance section for directions on fluid removal.*

Fluids

METIman is capable of bleeding simultaneously at two sites from an internal tank. Arterial and venous bleeding can be simulated.

Venous settings produce a continuous bleed at three user-adjustable flow rates.

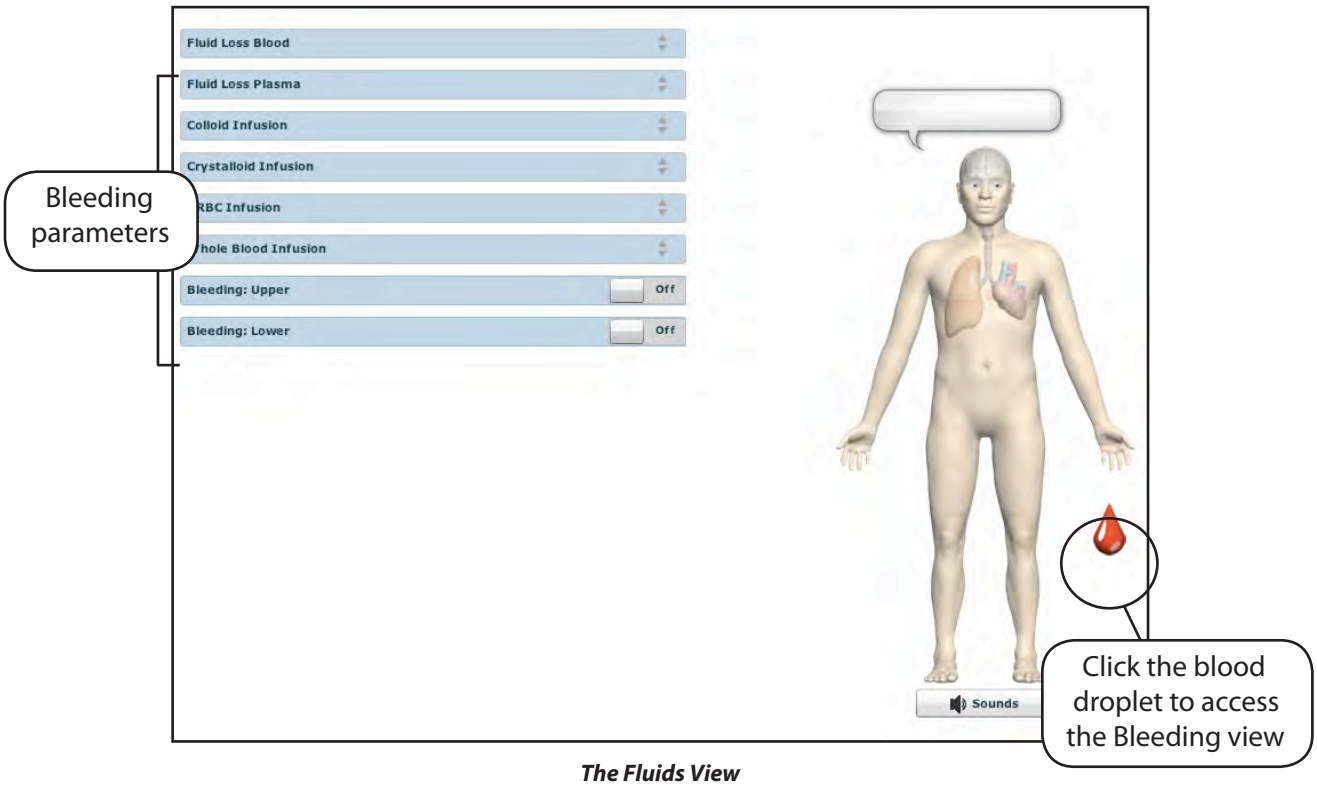
Arterial settings produce a pulsing flow synchronized with the cardiac cycle at three user-adjustable flow rates.

The flow rate is determined by the selected bleeding vessel size and the blood pressure. In addition, the simulator features auto-sensing of hemorrhage control (e.g., tourniquet application or direct pressure).

Bleeding results in an automatic loss of blood from the physiologic models with subsequent changes in hemodynamics. Blood loss occurs at a rate dependent on wound size and Mean Arterial Pressure (MAP).

Setup must be completed before using the bleeding feature.

To enable bleeding, on the Run screen, click the blood droplet. The Fluids view appears.



The Fluids View

Simulated blood MUST be removed from the simulator after each use. Failure to remove simulated blood from the simulator can void the warranty. *For instructions on how to clean the simulator after using the Bleeding feature, please refer to the Care and Maintenance section for directions on fluid removal.*

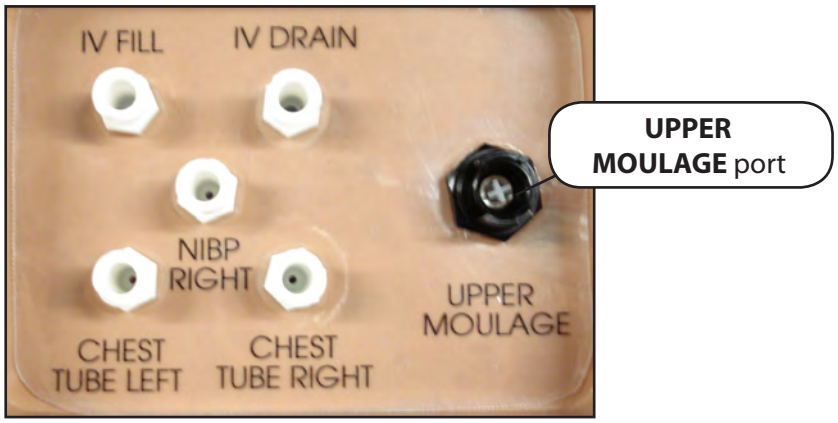
Hemorrhage Setup

The user determines the type and placement of the bleeding moulage for the lesson. An optional Moulage Kit can provide molded gunshot wounds, broken and protruding bones, amputations and an abdominal wound as well as theatrical components.

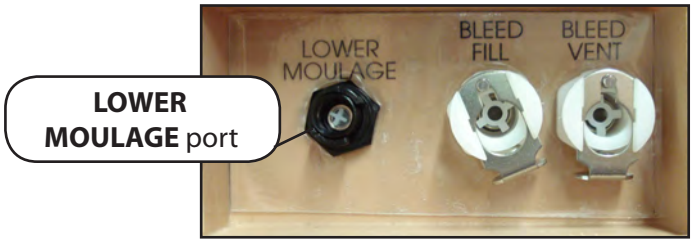
To decrease the likelihood of staining, apply a thin coat of petroleum to the area of bleeding.

To use one of the moulage wounds from the Moulage Kit:

1. Secure the wound over the simulator using the integrated straps.
2. Connect the wound haptic to the one of the moulage ports located on METIman's right shoulder (**UPPER MOULAGE**) or right hip (**LOWER MOULAGE**).



METIman's Right Shoulder



METIman's Right Hip

3. Enable **Bleeding: Upper** or **Bleeding: Lower** on the Fluids view of the Müse software, as desired.

Hemorrhage Control

When bleeding is controlled (e.g., hemostat, tourniquet), the action is detected and logged, and the physiology responds accordingly.

Tourniquet Application

A tourniquet may be applied to stop the flow of blood.

The wound umbilical contains an 18-inch section of soft tubing that allows the use of a tourniquet to stop the flow of blood.

For added realism, the simulator should be dressed in clothing that can be torn to "conform" with the type of injury being demonstrated. Bleeding moulages and the wound umbilical should be concealed under the victim's clothing with only the wound showing.

Tourniquet Application

Fluid Loss Blood

To manually control a patient's blood loss, from the Fluids view, click the **Fluid Loss Blood** parameter. The Fluid Loss Blood slider appears. Set the amount of blood loss by dragging the arrow up or down. Click **Accept** to exit and save the changes.

Fluid Loss Plasma

To manually control a patient's plasma loss, from the Fluids view, click the **Fluid Loss Plasma** parameter. The Fluid Loss Plasma slider appears. Set the amount of Plasma loss by dragging the arrow up or down. Click **Accept** to exit and save the changes.

Gastrointestinal

METIman produces realistic bowel sounds. In addition, on METIman Nursing, gastric lavage, gavage and suction can be administered.

Gastrointestinal Gavage, Lavage and Suction (Nursing Only)

METIman Nursing has a gastric reservoir that allows for simulated gavage, lavage and gastric suction. Before each use, ensure the reservoir has been drained completely. The reservoir should be primed with 60 mL of fluid before performing gastric suction (see *Gastric Suction* on page 190 for more information). A maximum of 100 mL of fluid may be added to the gastric reservoir once the reservoir is primed.

Gavage (Nursing Only)

To perform gastrointestinal gavage, ensure the reservoir is empty and infuse fluid according to procedure using a standard nasogastric tube. *For supported nasogastric tube size, see Recommended Clinical Supply Sizes on page 221*.

NOTE: Cleanup is very important when using simulated fluids. *Please refer to the Care and Maintenance section for directions on fluid removal.*

NOTE: Ice the nasogastric tube if extra rigidity is needed for insertion.

Lavage (Nursing Only)

To perform gastrointestinal lavage, ensure the reservoir is empty and infuse fluid normally using a standard nasogastric tube. Fluids can then be removed according to proper clinical procedure. *For supported nasogastric tube size, see Recommended Clinical Supply Sizes on page 221*.

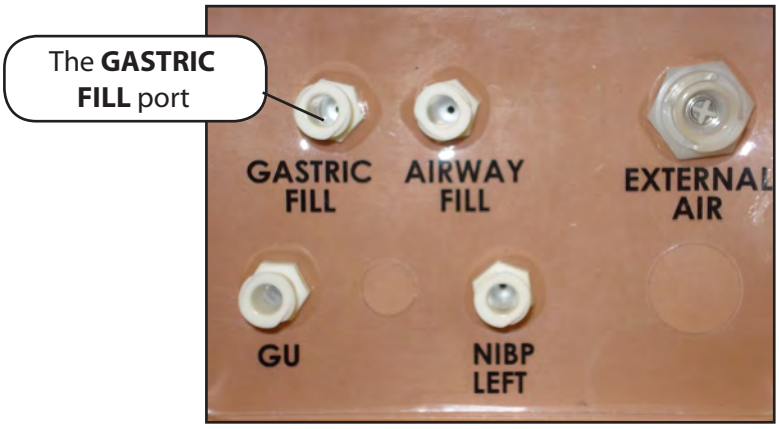
Gastric Lavage

NOTE: Cleanup is very important when using simulated fluids. *Please refer to the Care and Maintenance section for directions on fluid removal.*

NOTE: Ice the nasogastric tube if extra rigidity is needed for insertion.

Gastric Suction (Nursing Only)

To perform gastric suction, the reservoir must be primed prior to use. To prime the gastrointestinal reservoir, attach a syringe with a luer-lock extension set (provided) and inject 60 mL of distilled water into the **GASTRIC FILL** port on the simulator's left shoulder.



METIman Nursing's Left Shoulder

Fluids can then be removed according to procedure using a standard nasogastric tube. *For supported nasogastric tube size, see Recommended Clinical Supply Sizes on page 221*.

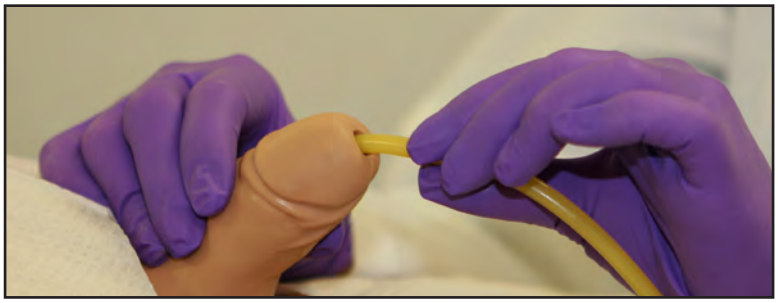
NOTE: Cleanup is very important when using simulated fluids. *Please refer to the Care and Maintenance section for directions on fluid removal.*

Genitourinary System

METIman may be configured with either male or female genitalia, either of which allows for the insertion of a urinary catheter. The genitourinary system also provides for the excretion of urine.

Urinary Catheterization

Catheterize the simulator using a standard urinary catheter lubricated with silicone spray. *For supported catheter size, see Recommended Clinical Supply Sizes on page 221*.



Urinary Catheterization

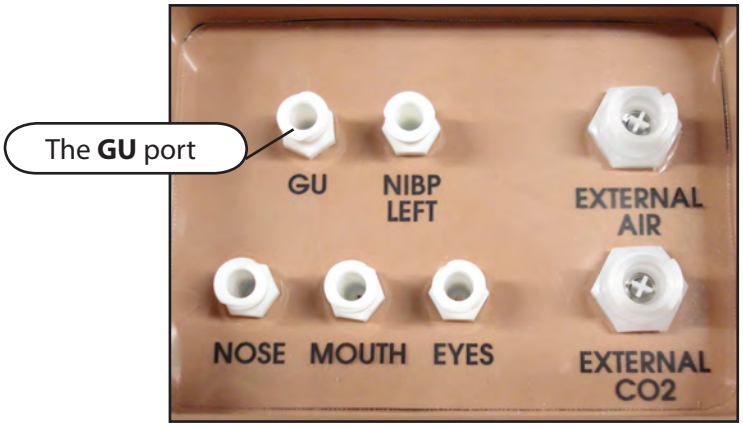
The bladder for the simulated urine is accessed directly via the urethra.

Simulating Urine Output

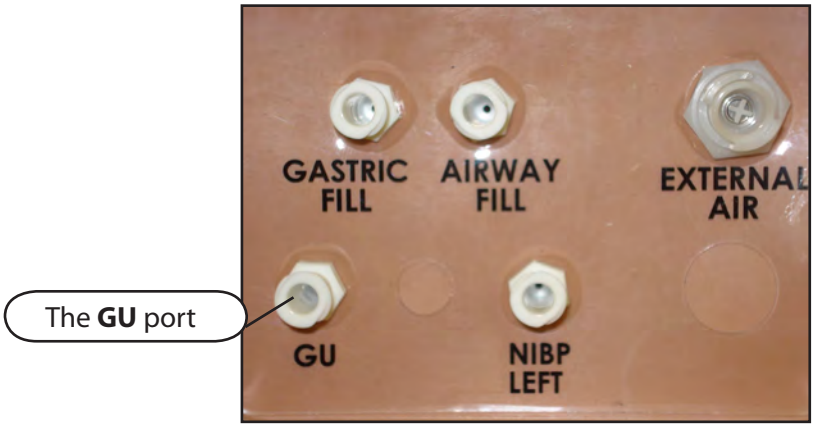
METIman allows urinary catheterization and simulation of urinary output. Ensure all fluids have been removed from previous uses before each new use to prevent overfilling. *Please refer to the Care and Maintenance section for directions on fluid removal.*

To simulate continuous urinary output:

1. Set up the IV pole near the simulator.
2. Fill an IV bag with the clinically appropriate fluid. Use distilled water only, with food coloring if desired.
3. Hang the IV bag on the IV pole.
4. Ensure the roller clamp is closed and insert the IV spike into the IV bag.
5. Connect to the simulator by attaching the end of the IV spike set tubing to the **GU** port on the simulator's left shoulder.



METIman Prehosptial's Left Shoulder



METIman Nursing's Left Shoulder

6. Open the clamp and allow fluid to flow into the simulator. There is a reservoir inside the simulator that fills up with the fluid.
7. Keep the IV bag attached. Adjust the flow rate manually using the roller clamp.
8. Catheterize the simulator using a urinary catheter lubricated with silicone spray. *For supported catheter size, see Recommended Clinical Supply Sizes on page 221*. The urinary catheter must be fully inserted for the fluid to flow.

NOTE: Cleanup is very important when using simulated fluids. *Please refer to the Care and Maintenance section for directions on fluid removal.*

If a small volume of fluid is needed to simulate proper urinary catheterization in a field location, the internal reservoir may be filled. To fill the genitourinary reservoir, attach a syringe with a Luer-lock extension set (provided) and inject 60 mL of distilled water into the **GU** port on the simulator's left shoulder.

Changing the Simulator's Genitalia

METIman comes with male and female genitalia.

To switch genitalia:

1. Pull apart the Velcro holding the genitalia.
2. Loosen and remove the urethra connector. This connection may be tight when genitalia are removed the first time.
3. Remove the genitalia.
4. Attach urethra tube to the urethra connector.
5. Attach the desired genitalia using the Velcro.

Sounds

A variety of simulated sounds are available to enhance realism. A patient must be running on METIman for any sounds to be available.

Speech

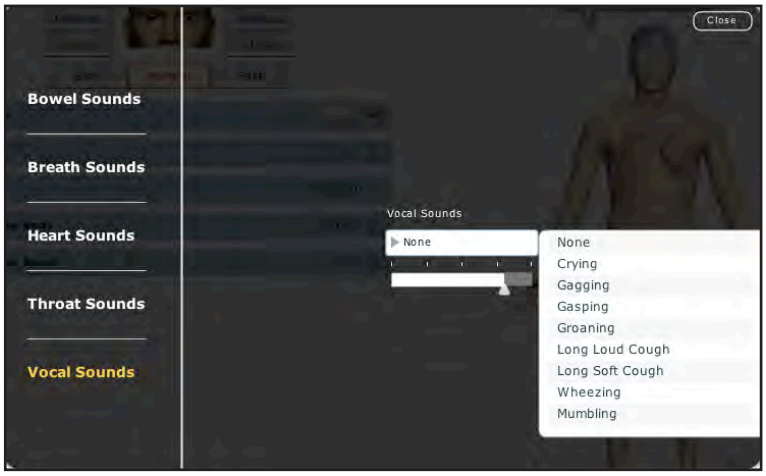
Speech can be added to simulations using the Vocal Sounds and Speech Sounds features on the software or by using an external microphone.

Vocal Sounds

A variety of programmable vocal sounds are available. Vocal sounds are male or female based on the gender of the active patient.

Vocal Sounds
None
Audible Wheezing
Crying
Gagging
Gasping
Groaning
Long loud cough
Long soft cough
Mumbling

To select a sound from the Vocal Sounds drop-down menu, click the **Sounds** button on the Run screen. The Sounds panel appears.



Vocal Sounds Menu

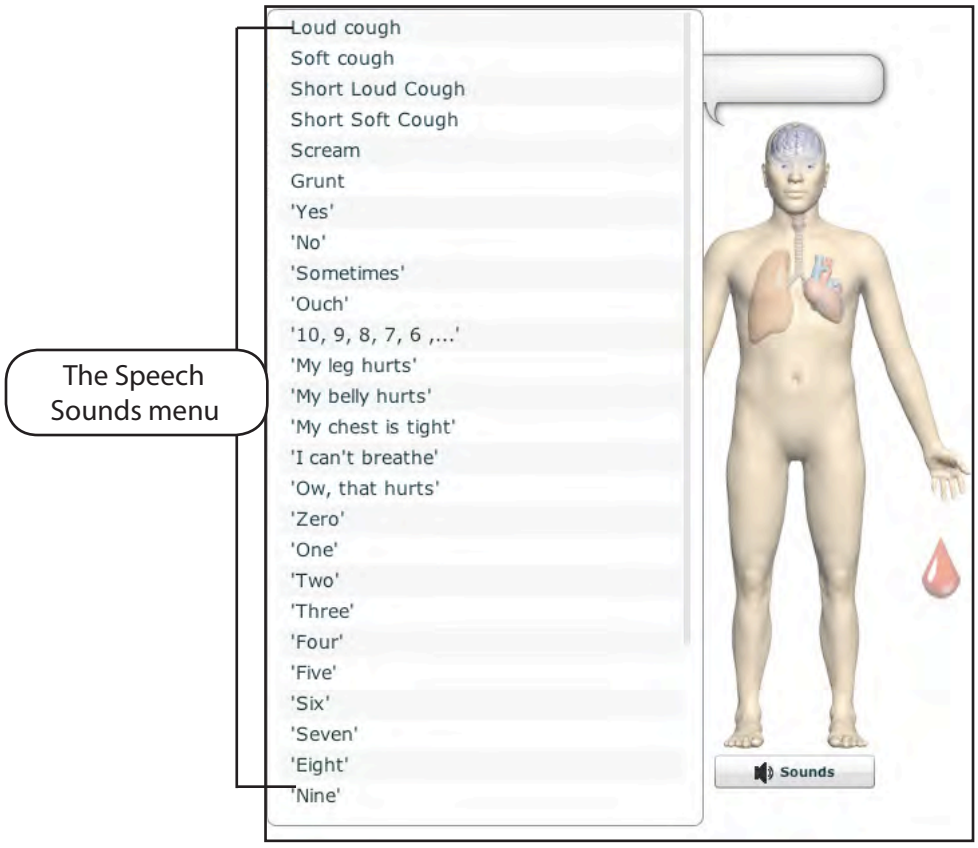
Click **Vocal Sounds** and select the type of sound desired from the Vocal Sounds drop-down menu. Vocal Sounds play continuously when selected and are emitted immediately when selected from the **Vocal Sounds** drop-down menu. To stop playing one of the vocal sounds, select **None** from the list.

Speech Sounds

Speech Sounds include a male or female voice that can utter pain rating indicators from 0 to 10, various phrases and a series of other utterances. Unlike Vocal Sounds, Speech Sounds only play once.

Speech Sounds
Loud Cough
Soft Cough
Short Loud Cough
Short Soft Cough
Scream
Grunt
"Yes"
"No"
"Sometimes"
"Ouch"
"My leg hurts"
"My belly hurts"
"My chest is tight"
"I can't breathe"
"Ow, that hurts"
"0" through "10" - Pain Ratings
"Sharp"
"Pressure"
"Aching"
"Dull"
"Stabbing"

To play a Speech Sound, click the **Speech** balloon. A list of Speech Sounds appears.



The Speech Sounds Menu

Select the desired sound. The sound plays, and the list disappears.

To replay the last sound, click the **Play** button in the **Speech** balloon.

Wireless Voice Capability

In addition to the pre-programmed speech, any response can be transmitted through the speakers using the wireless microphone.

Wireless Microphone

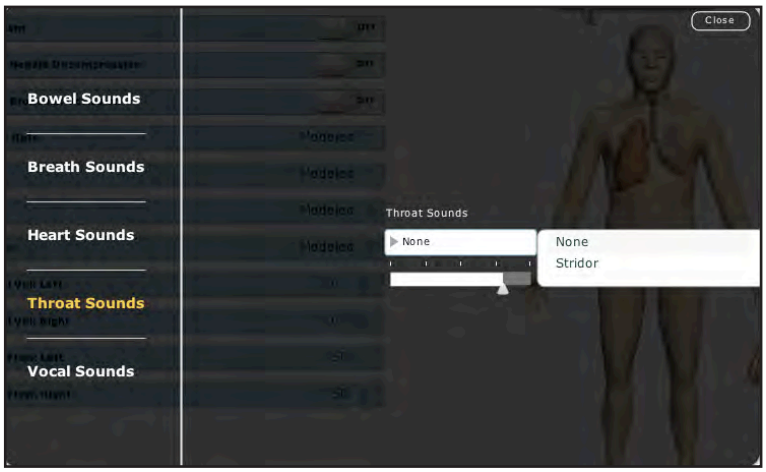
The microphone volume can be adjusted on the microphone itself using the volume control.

Wireless Voice Link

If a wireless voice link package was included with the METIman simulator, see *Appendix B - Wireless Voice Link* on page B-1 for additional instructions.

Throat Sounds

Stridor throat sounds can be enabled using the software. Throat sounds can be adjusted by clicking the **Sounds** button on the Run screen. When the Sounds panel appears, select Throat Sounds.



The Throat Sounds Menu

Click the **Throat Sounds** drop-down menu to change the type of sound. Click and drag the slider to adjust the volume.

Breath Sounds

Breath sounds are independently synchronized with ventilation of the left and right lungs. Fourteen speakers, eight anterior and six posterior, provide breath sounds that can be auscultated. Each of the four quadrants of the torso can be set independently to produce a particular breath sound.

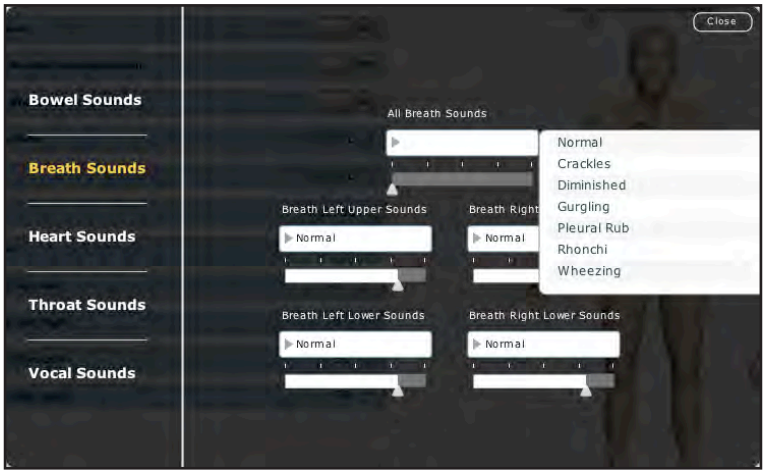
Breath Sounds
Normal
Crackles
Diminished
Gurgling
Pleura Rub
Rhonchi
Wheezing

Click any one of the **Breath Sounds** drop-down menus that each control one of four quadrants to change the type of sound. Click and drag the slider for each location to adjust the volume.

A patient must be running on a METIman simulator for any sounds to be available.

By default, **Normal** breath sounds are heard.

Breath sounds can be adjusted by clicking the **Sounds** button on the Run screen. When the Sounds panel appears, select **Breath Sounds**.



The Breath Sounds Menu

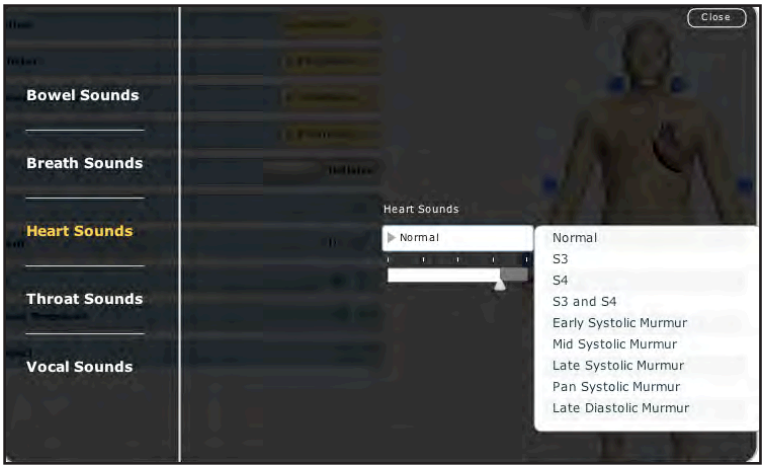
Heart Sounds

Heart sounds emanate from four speakers and are synchronized with the cardiac cycle. Heart sounds can be auscultated over the left and right sternal border, right lower sternal boarder and apex.

By default, heart sounds are set to the **Normal** sound. The following sounds are available:

Heart Sounds
Normal S1-S2
S3
S4
S3 and S4
Early Systolic Murmur
Mid Systolic Murmur
Late Systolic Murmur
Pan Systolic Murmur
Late Diastolic Murmur

Heart sounds can be adjusted by clicking the **Sounds** button on the Run screen. When the Sounds panel appears, select **Heart Sounds**.

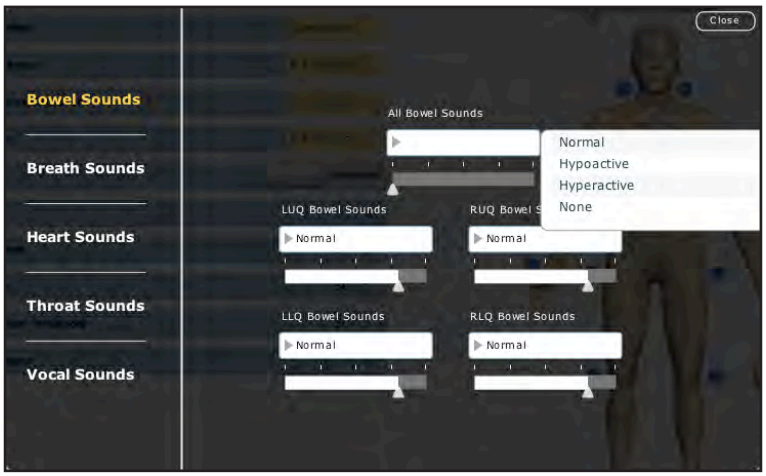


The Heart Sounds Menu

Click the **Heart Sounds** drop-down menu to change the type of sound. Click and drag the slider to adjust the volume.

Bowel Sounds

Learners can auscultate bowel sounds over each of four intestinal quadrants: the Upper Right, Upper Left, Lower Right and Lower Left. The sounds can be independently set in each anatomical region to **Normal**, **Hypoactive**, **Hyperactive** or **None** (bowel sounds are absent).



The Bowel Sounds Menu

Bowel sounds can be adjusted by clicking the **Sounds** button on the Run screen. When the Sounds panel appears, select **Bowel Sounds**.

Click any one of the **Bowel Sounds** drop-down menus that each control one of four quadrants to change the type of sound.

Click and drag the slider for each location to adjust the volume.

Normal bowel sounds are present by default.

Care and Maintenance

Maintaining METIman requires careful treatment of the electronic and mechanical components. Each time METIman is assembled or disassembled, make sure all components are properly handled and either removed from or placed into storage correctly.

METIman Warranty Programs

General Information

CAE Healthcare patient simulator products come with a one-year Manufacturer's Warranty (excluding batteries and consumables). All warranties begin at date of shipment or CAE Healthcare installation. You may upgrade your first year Warranty to an Enhanced Warranty and receive remedial and planned maintenance. To prevent equipment downtime and delays after your warranty expires, we encourage you to contract for extended maintenance services for all subsequent years.

Units Out of Agreement

For units no longer under warranty requiring repairs, the Time and Materials service plan will apply (see Time and Materials section).

To place an out-of-warranty unit under a warranty contract, CAE Healthcare reserves the right to have the patient simulator inspected by a CAE Healthcare-approved technician at the customer's expense. If necessary, the unit would have to be repaired at the customer's expense prior to issuance of a warranty contract.

The repairs required as the result of the examination will be quoted on a time and material basis.

How to Contact Customer Service

CAE Healthcare Customer Service Headquarters - United States and Latin America
Monday - Friday from 7:00 a.m. to 6:00 p.m. ET
Toll Free +1 (866) 462-7920
24-hour Hotline +1 (941) 342-5605
Fax +1 (941) 342-5600
Email Address: customerservice@caehealthcare.com
Web URL: www.caehealthcare.com

CAE Healthcare Customer Service - Canada
Monday - Friday from 8:00 a.m. to 5:00 p.m. ET
Toll Free +1 (877) 223-6273
Email Address: can.service@caehealthcare.com

CAE Healthcare Customer Service - Europe, Middle East and Africa (EMEA)
Monday - Friday from 8:00 a.m. to 5:00 p.m. CET
Phone +49 (0) 6131 4950354
Fax +49 (0) 6131 4950351
Email Address: international.service@caehealthcare.com

CAE Healthcare Customer Service - UK and Ireland
Monday - Friday from 9:00 a.m. to 5:00 p.m. GMT
Phone +44 (0)800-917-1851
Email Address: uk.service@caehealthcare.com

Principal hours of operation exclude holiday and non-business days.

Contract Period

Warranty contracts are not ordinarily offered for periods of less than one year. However, multiple-year warranty contracts may be arranged for up to an additional three years. Discounts are available for purchase of multiple-year contracts.

Limitations of Agreement

Your exclusive remedy for any defective patient simulator is limited to the repair or replacement of the defective patient simulator.

CAE Healthcare may elect which remedy or combination of remedies to provide at its sole discretion. CAE Healthcare shall have a reasonable time after determining that a defective material exists to repair or replace defective material. CAE Healthcare's replacement material will be manufactured from new and/or serviceable parts. CAE Healthcare's agreement applies to repaired or replaced materials for the balance of the applicable period of the original warranty or ninety days from the date of shipment of a repaired or replaced material, whichever is longer. CAE Healthcare warrants its LABOR for 30 days or the balance at the applicable period of the original warranty, whichever is greater.

CAE Healthcare shall not be liable under this warranty for incidental or consequential damages, or in the event of any unauthorized repairs or modifications have been made or attempted, or when the product, or any part thereof, has been damaged by accident, misuse or abuse. This warranty does not cover normal wear and tear, staining, discoloration or other cosmetic irregularities that do not impede or degrade product performance. Any damage or malfunction as a result of the installation of software or hardware, not authorized by CAE Healthcare, will be repaired under the Time and Materials service plan (see Time and Materials section).

CAE Healthcare's warranty does not cover products that have been received improperly packaged, altered or physically damaged. Products will be inspected upon receipt.

Some states in the USA do not allow the exclusion or limitations of incidental or consequential damages, so the limitations above may not apply to you. This warranty gives you specific legal rights and you may also have other rights, which vary from state to state.

Return Materials Authorization (RMA)

No product may be returned directly to CAE Healthcare without first contacting CAE Healthcare for an RMA number. If it is determined that the product may be defective, you will be given an RMA number and instructions for product return. An unauthorized return, e.g., one for which an RMA number has not been issued, will be returned at your expense. Authorized shipments are to be shipped prepaid to the address on the RMA. Your original box and packaging materials should be kept for storing or shipping your product. To request an RMA, please contact Customer Service.

System Software Upgrade Support

Customers with current warranty contracts are entitled to receive upgrades to applications software previously purchased. Installation of the system software is the user's responsibility.

The System Software Upgrades Support includes software upgrades for base software and purchased optional software modules.

This does not apply for major upgrades or technological enhancements.

Pricing Structure

Time and Materials

For those systems not under agreement, service will be provided as required on a Time and Material basis:

Description	In-House	On-Site
Technical Support	As quoted at time of repair	CAE Healthcare's prevailing labor rate with a minimum of four hours labor
Material	As quoted at time of repair	As quoted at time of repair
Travel	N/A	Priced at CAE Healthcare's fully burdened cost plus fee

Principal period of on-site support (customer's local time) is:

- Monday through Friday, 8:00 AM to 5:00 PM (customer's time zone)
- Holiday and non-business days excluded
- Support outside the principle period is billed at the premium rate (hourly rate x 1.5)

A minimum of 48 hours notice is required for scheduling an on-site support call. Urgent on-site support with less that 48 hours notice will be charged at the premium hourly rate.

On-site time is described as the time period commencing from arrival at customer site through departure from customer site.

Breakdown

After each use, METIman should be properly disassembled and stored in a secure place. To ensure that METIman remains in good working condition, follow the prescribed CAE Healthcare breakdown procedures below. These procedures are estimated to take less than 30 minutes.

	Breakdown Steps
1	Stop All Running SCEs
2	Clean the Simulator and the Fluid System
3	Shut Down the Software
4	Power off the Simulator

Step 1: Stop All Running SCEs

Stop any running SCEs using the **Stop** button in the upper right corner of the Müse software for each SCE.

Step 2: Clean the Simulator and the Fluid System

Refer to the Maintenance Advice on the following pages for detailed instructions.

Step 3: Shut Down the Software

To shut down the Müse software:

1. Click the Account Name in the lower, right-hand corner of the screen. The Logout/ Shutdown dialog box appears.
2. Click **Logout** to exit the software, or click **Shutdown** to shut down the computer.

To shut down the TouchPro software (optional):

1. Click the **Settings** button from the bottom, right-hand corner of the TouchPro screen.
2. From the Settings menu, click **Shutdown**. A warning box appears asking if you want to exit.
3. Click **Shutdown**.

Step 4: Power Off the Simulator

1. Carefully pull back the skin on METIman's left hip and hold the power switch for two seconds. The light on the button begins to blink, indicating shutdown is in progress. After approximately 30 seconds, the light is off, and shutdown is complete. If the simulator fails to shut down when the above steps are performed correctly, hold the power button for five seconds to force the system to power off
2. Carefully put the skin back into place for storage.

Maintenance Advice

Simple care and maintenance helps to ensure that METIman stays in good working condition. Many problems are caused by inadequate or improper maintenance. Perform a thorough check of the various components each time the simulator is used. Failure to follow these guidelines can lead to damage not covered by warranty.

General Simulator Care

Avoid the use of writing instruments and sharp objects near the patient simulator to prevent unattractive markings on or tears in the skin.

Lubricate airway adjuncts, urinary catheters and chest tubes with silicone spray (NOT a water-based lubricant) prior to insertion.

A mild detergent and warm water will remove most marks and stains. Gently rub the soiled area with a soft cloth. Do NOT use ABRASIVE soaps or pads.

Prior to using moulage of any kind, CAE Healthcare suggests the application of a very light coating of petroleum jelly, followed by a light dusting of baby powder, to the simulator's skin. This application makes cleaning the skin easier.

If any of METIman's fluid systems have been used, flush out the simulator as described in the following pages. Failure to flush the systems may cause damage to the simulator.

Storage

When in regular use, METIman's breakdown procedure and general cleanup should be sufficient to prepare the simulator for storage.

In addition, be certain to follow these instructions:

- Storage temperature should not exceed 122° F (50° C) or fall below 41° F (5° C).
- If a soft-sided simulator case is being used, the simulator should lie flat.
- The simulator should NEVER be stored or shipped with fluids in the system.

Care of Electronic Equipment

Install any CAE Healthcare software updates as soon as they become available.

Airway Inspection

METIman is equipped with an anatomically accurate airway that supports the practice of difficult airway management techniques. In the process of performing these techniques improperly or aggressively, the upper airway can be damaged.

Because damage can occur, occasional visual inspection of the airway is recommended. Using the light of a laryngoscope blade or a flashlight, visually examine the airway. While tears in the upper airway resulting from intubation may be obvious, needle holes in the lower trachea resulting from techniques such as transtracheal jet ventilation may not be readily apparent.

If damage to the airway is found, small cuts or tears may be reparable with silicone adhesive. However, for permanent repair of damaged simulators, contact CAE Healthcare Customer Service.

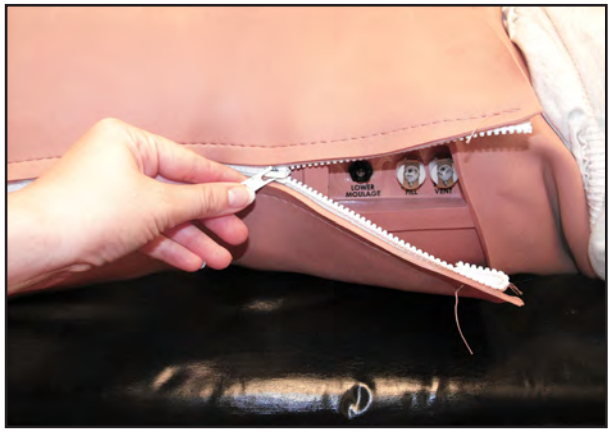
Replacing the Battery

After approximately four hours of use, the simulator's battery must be removed to be recharged or replaced with a charged battery.

WARNING : When handling METIman's batteries, be sure to adhere to all the cautions and warnings.

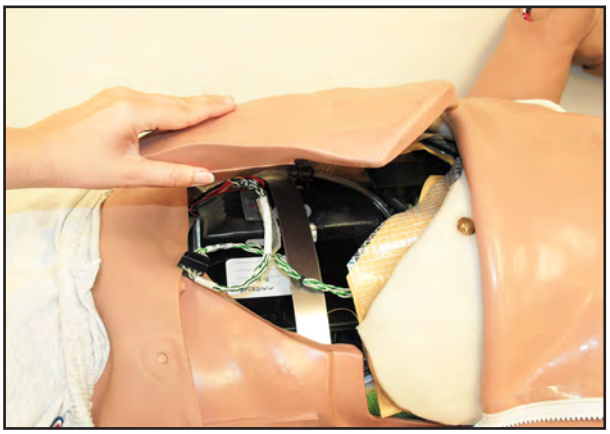
To replace the battery:

1. Unzip the chest skin.



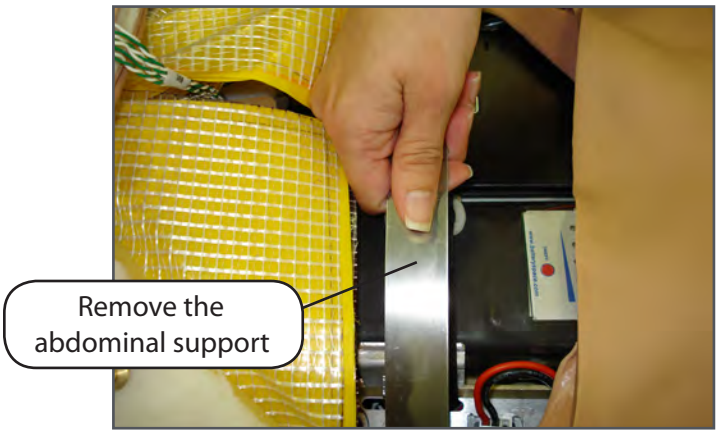
Unzipping the Chest Skin

2. Lift the abdominal insert.



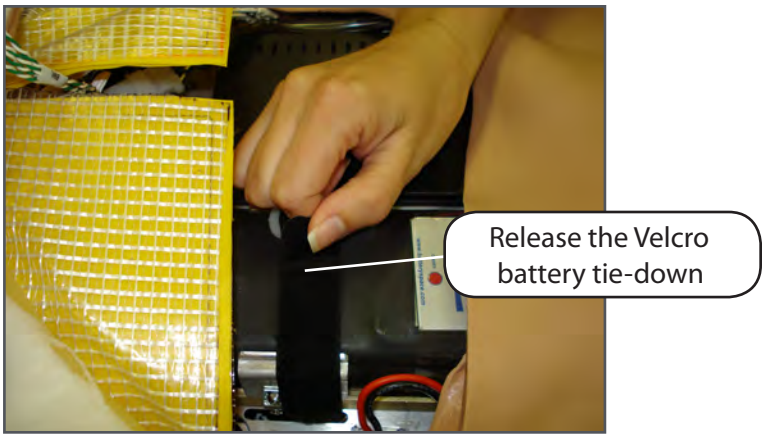
Lifting the Abdominal Insert

3. Remove the abdominal support.



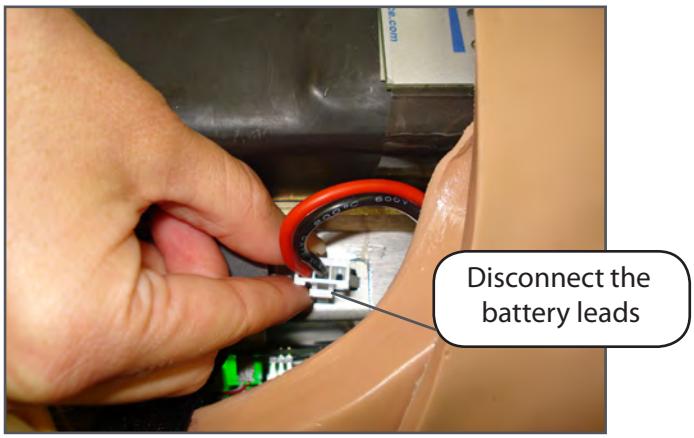
Removing the Abdominal Support

4. Release the Velcro battery tie-down.



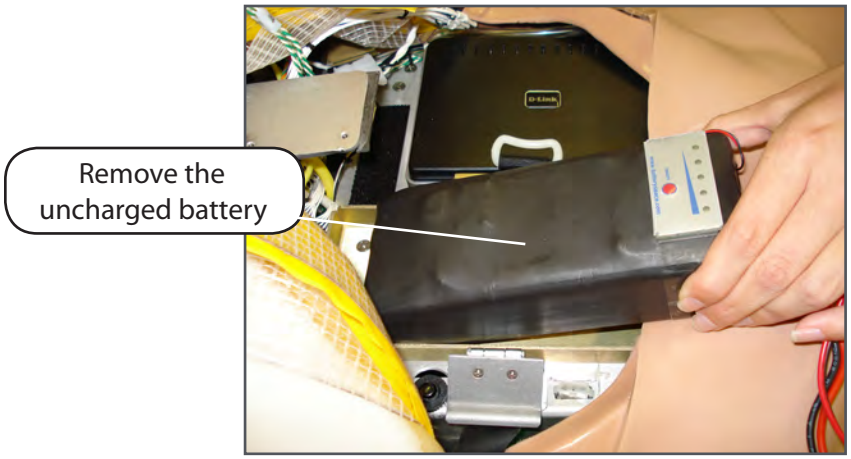
Releasing the Battery Tie-Down

5. Disconnect the battery leads.



Disconnecting the Battery Leads

6. Remove the uncharged battery.



Removing the Battery

7. Insert a charged battery and affix the battery tie-down.
8. Connect the battery leads and replace the abdominal support, ensuring both ends are secure in the slits.
9. Replace the abdominal insert and chest skin.

Recharging the Battery

The battery should be recharged after approximately four hours of use.

To recharge the battery, disconnect and remove the battery from the simulator and connect to the external charger provided.

WARNING: When handling METIman's batteries, be sure to adhere to all the cautions and warnings

Recharging should take approximately four hours.

IMPORTANT: Never recharge the battery while it is connected to METIman.

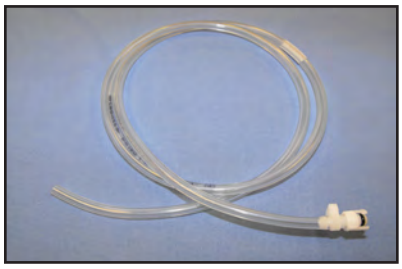
Draining Condensation from the Simulator

As part of a regular preventive maintenance schedule, condensation should be drained from the simulator.

Depending on environmental conditions, moisture may condense inside the compressed air lines and tanks within the simulator. It is recommended that this fluid be drained every 40 hours of operation. In outside, high-humidity conditions, the system should be drained more frequently.

To drain condensation:

1. Locate the Condensation Drain Hose included with the Inventory Kit.



Condensation Drain Hose

2. Bring the hose and a small bucket to the simulator location.
3. Locate the **EXTERNAL AIR** port on METIman's left shoulder.
4. With assistance, place METIman into a supine position.
5. Power on METIman. Do NOT launch the Müse software.
6. Allow 60 seconds for the internal compressor to pressurize the system.
7. Power down METIman.
8. With assistance, raise the left leg 45 degrees.
9. Place the tubing end of the Condensation Drain Hose into the small bucket and then connect the fitting onto the simulator's drain connector. There will be a sudden release of pressure into the bucket. Any condensation within the system drains with this exhaust.
10. Disconnect the Condensation Drain Hose from the simulator.

Cleaning the Simulator and the On-Board Bleeding System

NOTE: A small bucket is recommended to collect wastewater during cleaning and flushing operations.

To clean and maintain the simulator and On-Board Bleeding system:

1. Remove and clean the wound haptics.
2. Connect the beige-colored "fill" connector from the Trauma Fill Tank to the hip, but do not connect the white "vent" connection.
3. Open the yellow Pressure Relief knob clockwise on the Trauma Fill Tank or loosen its Fill Lid so the tank is able to vent during this draining process.
4. With the wound umbilicals in place, put the ends of both wound umbilicals into a wastewater bucket.
5. From the Müse home screen, click the **System Administration** button in the top right of the screen.
6. From the Maintenance screen, click **Flush System**. The fluid begins to drain.
7. Verify both channels produce a high, steady flow.
8. When fluid stops flowing from either wound umbilical, detach the Fill Tank from the simulator.
9. When fluid stops flowing from the lower wound umbilical, detach from the simulator.
10. When fluid stops flowing from the upper wound umbilical, detach from the simulator.
11. Click **Done** on the Maintenance screen. The fluids are now drained.
12. Empty the wastewater bucket.
13. Rinse out the Trauma Fill Tank and fill with approximately 1 liter of clean, distilled water.
14. Pump this fluid into the simulator.
15. Repeat Steps 3 through 7 and 9 through 15 until the fluid exiting the simulator runs clear.
16. Empty the Fill Tank and dry the wound umbilicals with a towel before storage.

    NOTE: It takes two to three minutes for this final flush.

    Once a month, it is advised to flush the system with a mix of 50% distilled water and 50% white vinegar to keep mineral and algae buildup to a minimum. Always perform the steps for Flushing the Simulator afterward to remove vinegar.

Cleaning the Trauma Fill Tank

To prolong the life of the Trauma Fill Tank assembly and the fluid reservoirs, wash and flush the tank and connections after each use with clean distilled water.

NOTE: A small bucket is recommended to collect wastewater during cleaning and flushing operations.

Do NOT store liquids in the Trauma Fill Tank. If simulated blood mixtures are stored in the tank, they may clog the system when they dry and possibly damage the seals, filter and other components.

1. Remove and rinse the Overflow Bottle.
2. Remove and rinse the Pump Assembly.
3. Rinse the tank to remove all traces of the simulated blood.
4. Pour 480 mL (16 oz) of distilled water into the tank and reinstall the Pump Assembly. (The Overflow Bottle holds 16 ounces.)
5. Place the Overflow Bottle lid with umbilical attached into the wastewater bucket.
6. Attach the fill (blue-labeled) and vent (yellow-labeled) fittings together at the other end of the umbilical.
7. Pump the tank 25 times while making sure the wastewater is going into the bucket.
8. Allow the tank to empty completely (the remaining air pressure will purge the fluid from the lines.
9. Reinstall the lid onto the Overflow Bottle and place the bottle back onto the tank assembly.
10. Remove the Pump Assembly and pour any remaining fluid out of the tank. Then, reinstall the pump.
11. Disconnect the fill and vent fittings from each other and wrap the Trauma Tank Umbilical around the neck of the tank.

Always depressurize the tank, remove trauma fluid and clean the tank before performing maintenance. The pump assembly may need periodic lubrication. Call CAE Healthcare Customer Service for details if the pump loses the ability to create pressure, squeaks loudly or is difficult to move.

Cleaning the In-Line Filter

To clean the in-line filter:

1. Grasp both ends of the in-line filter and twist counterclockwise.
2. Pull apart both ends of the filter to separate.
3. Remove the blue filter cone from the encasement. Do NOT remove the black rubber seal.
4. Using a 60 mL syringe with distilled water, push fluid from the outside of the blue filter cone to the inside, removing all debris.
5. Repeat process until all debris is removed.
6. Re-assemble the in-line filter, ensuring the black rubber seal is in place at the base of the blue filter cone.

The In-Line Filter

Troubleshooting the Trauma Fill Tank

Before making any repairs, ALWAYS depressurize the tank, remove all trauma solution and clean the tank.

Problem	Cause	Solution
Tank can be pressurized, but only air comes out.	Siphon tube has detached from insert.	Remove hose from tank and reinsert siphon tube.
Pressure does not build up. No fluid is transported to simulator.	(1) Pump assembly not sealed tightly into tank or (2) Damaged pump cylinder gasket or o-ring or (3) Tank pressure relief valve is set to "open."	(1) Thoroughly clean pump cylinder gasket or o-ring and surrounding area and apply a light coating of silicone to pump gasket or o-ring. (2) Contact CAE Healthcare for service. (3) Turn valve until it returns to a "sealed" position.
Simulator fill time is too long (more than 5 minutes).	(1) Not enough strokes applied to create pressure or (2) The in-line filter is dirty or (3) The umbilical is disconnected at Overflow Bottle or (4) Too much fluid in fill tank.	(1) Pump 25 to 35 times for best performance. (2) Clean filter. (3) Reconnect the overflow fitting. (4) The Trauma Fill Tank works best with 1 gallon (3.6 liters) of fluid inside. If greater amounts of fluid are used, tank may require additional pumps as fluid is transported to simulator.

Emptying and Flushing the Chest Tube Reservoir

Removing fluids from the Chest Tube reservoir and the Chest Tube system requires the same steps.

To empty the Chest Tube reservoir or flush the Chest Tube system, have a chest tube and a basin to catch fluid in place. Use a syringe to slowly push air through the appropriate **CHEST TUBE** port until only air flows through the chest tube.

Flushing the IV Lines

To flush the IV lines:

1. Connect an empty IV bag to the **IV DRAIN** port.
2. Using a syringe, slowly push air into the **IV FILL** port. The fluid drains out of the **IV DRAIN** port.
3. Continue to push air until empty.

Emptying the Genitourinary Reservoir

To empty the Genitourinary reservoir, have a catheter in place and a basin to catch fluid. Use a syringe to slowly push air through the **GU** port until only air flows through the catheter.

Emptying the Head Secretions Lines (Prehospital Only)

To remove fluid from the Head Secretions lines, connect a syringe to the **NOSE** port and vacuum out fluid until empty. Repeat this process for the **MOUTH** and **EYES** ports.

Emptying the Airway Secretions Reservoir (Nursing Only)

To empty the Airway Secretions reservoir, connect a 60 mL syringe to the **AIRWAY FILL** port and vacuum out fluid until empty.

Flushing the Subclavian Catheter (Nursing Only)

When flushing the Subclavian Catheter, the catheter must be in place.

To flush the Subclavian Catheter:

1. Connect an external drain to the **IV DRAIN** port and place a basin to catch fluid.
2. Using a syringe, slowly push air into the **IV FILL** port. The fluid drains out of the **IV DRAIN** port.
3. Continue to push air until empty.
4. Using the same syringe, push air through the Subclavian Catheter until empty.

Handling CO_2 Canisters (Prehospital Only)

Careful handling is required in the use of CO_2 canisters. Please read and follow all appropriate cautions and warnings.

Removing CO_2 Canisters from the Regulator

The following instructions describe how to safely remove the CO_2 canister from the regulator assembly for replacement or shipping.

CAUTION: If unsure that CO_2 canister is empty, eye and hand protection must be worn to protect from release of freezing gas or liquid.

1. Remove the CO_2 regulator assembly from the simulator.
2. While holding the regulator assembly firmly, slowly unscrew the CO_2 canister from the regulator. There is a small relief hole in the side of the regulator from which any remaining CO_2 will bleed. If this should happen, no harm will be done to system, but it is rather noisy and the rapid release of CO_2 gas can freeze the canister's surface and cause frostbite to unprotected skin.
3. Continue unscrewing the canister until it is free from the assembly.

Important Canister Information

The 16 Gram CO_2 Canister with threaded neck is available at most sports equipment retailers - most often used for bicycle tire inflators. We recommend purchasing Leland brand canisters (P/N 82122Z), which are also available from CAE Healthcare.

Punctured canisters are considered to be empty. No residue remains in the canister after use. The steel used is a low carbon type, which rusts if disposed in a landfill. If your community requires recycling, then place with normal household recycling.

CO_2 Canisters are considered by the U.S. Department of Transportation to be "Other Regulated Materials - Domestic" (ORM-D). Ground shipping containers must be clearly marked with this label. CO_2 Canisters are considered hazardous material when offered for air transportation, so different rules apply. Contact carrier for details and instructions.

Related CAUTIONS/WARNINGS

CO_2 Canister

- Store the CO_2 canisters in a dry location between 32° and 104° F (0 to 40°C).
- Do not expose the CO_2 canister to heat above 140° F, as rupture may occur.
- Never point the CO_2 canister towards your face or someone nearby.
- Use only CAE Healthcare specified CO_2 canisters.

CO_2 Regulator Assembly

- Care must always be taken when using high-pressure equipment.
- Do not disassemble or alter regulator.
- Dry completely if the regulator becomes wet.
- Discontinue use of this equipment if leakage or visible damage is evident.

Use of Equipment

- Canister end becomes punctured when screwed into regulator base and therefore should not be removed until empty.
- Unscrewing canister before it is empty will result in sudden release of all high-pressure gas with a possibility of liquid CO_2 spray. Unprotected skin could receive freezing burns.
- Wear protective gloves and eye protection when removing canister from regulator assembly.
- Remove CO_2 canister from regulator assembly when shipping simulator.

Recommended Clinical Supply Sizes

The following clinical supply sizes are recommended for use with the simulator. Other sizes may cause damage and should not be used.

Clinical Supply	Recommended Size - METIman Prehospital	Recommended Size - METIman Nursing
Urinary Catheter	16 Fr	14 to 16 Fr
Nasogastric Tube	14 Fr**	12 to 14 Fr*
Gastric Lavage/Gavage	Not Supported	12 to 14 Fr*
Airway Suctioning	Not Supported	12 to 14 Fr*
ETT	7.0 to 7.5 mm	Not Supported
LMA Unique	#4	Not Supported
King LTS-D LT-D	#4	Not Supported
Combitube	37 Fr	Not Supported
Oropharyngeal Airway	90 mm	90 mm
Nasal-Pharyngeal Airway	30 Fr 7.5 mm	30 Fr 7.5 mm
Tracheostomy Tube	6 mm	6 mm
IV Cannula	18 to 22 gauge	18 to 22 gauge
Chest Tube	28 Fr	26 to 28 Fr
Needle Decompression	14 gauge 6 cm	Not Supported

*With fluid return

**Insertion only

Condition Guidelines for Programming METIman

This card is intended to help you select Müse conditions to achieve desired vital signs within each programmed state. All four conditions should be programmed into each state in the order presented below.

- Respiratory: Desaturation
- Cardiovascular: Blood Pressure
- Cardiovascular Heart Rate
- Respiratory: Respiratory Rate

The Müse software is physiologically driven. When using multiple conditions (e.g., Desaturation + Hypertension + Tachycardia + Tachypnea), physiological regulatory mechanisms such as the baroreceptor reflex and ventilatory control cause compensatory changes within parameters. To achieve the desired vital sign, select one condition level, above (greater) or below (less), to achieve the desired physiological effect.

Respiratory: Desaturation

Desaturation	SpO_2 Value
Reset	98%
High 90s	96-97%
Mid 90s	94-96%
Low 90s	91-93%
High 80s	87-90%
Mid 80s	84-86%
Low 80s	80-83%
High 70s	77-80%
Mid 70s	74-77%
Low 70s	69-71%
Less than 70	<69%

Cardiovascular: Blood Pressure

Hypertension		Hypotension	
Reset	110s/70s	Reset	110s/70s
Increased	120s/80s	Decreased	100s/70s
Pre-Borderline	130s/80s	Pre-Borderline	100s/60s
Borderline	140s/90s	Borderline	90s/50s
Mild	150s/90s	Mild	80s/40s
Moderate	160s/100s	Moderate	70s/40s
Severe	170s/100s	Severe	60s/30s
Profound	190s/110s	Profound	50s/30s
Extreme	220s/120s	Extreme	40s/30s

Cardiovascular: Heart Rate

Tachycardia		Bradycardia	
Reset	70s	Reset	70s
Increased	High 70s	Decreased	Mid 60s
Elevated	80s	Pre-Borderline	Low 60s
Pre-Borderline	90s	Borderline	Mid 50s
Borderline	100s	Intermediate	Low 50s
Intermediate	110s	Mild	High 40s
Mild	120s	Moderate	Mid 40s
Moderate	130s	Severe	Low 40s
Severe	140s	Extreme	Mid 30s
Supra	150s	Acute	Low 30s
Profound	160s		
Extreme	170s		
Acute	High 170s		

Respiratory: Respiratory Rate

Tachypnea		Bradypnea	
Reset	11	Reset	11
Increased	15	Increased	10
Elevated	18	Intermediate	9
Borderline	20	Mild	7
Intermediate	22	Moderate	6
Mild	25	Severe	5
Moderate	28	Profound	3
Severe	31	Extreme	2
Profound	33		
Extreme	36		

Appendix A – Müse Parameter Descriptions

The Müse software has a number of parameters that control the physiological features of METIman The parameters are grouped by category: Neurological, Respiratory, Cardiovascular, Fluids and Sounds. The following is a brief description of each parameter.

Each parameter description lists the default settings for the Stan D. Ardman II and Norma L. Female patients as well as the ranges, if available, for all patients.

Neurological

METIman can simulate a variety of neurological clinical indicators, such reactive eyes and convulsions.

Neurological Parameters
Eyes: Pupil Size
Eyes: Blink Speed
Convulsions
ICP
NMB
Temperature: Body
Temperature: Blood

Eyes

Each eye has reactive pupils and eyelids that blink and close.

Eyes: Pupil Diameter

These parameters are used to control the diameter of the pupils in the eyes. Each eye has reactive pupils and functional eyelids that blink.

Currently, there are four pupil options that are used to control the diameter of the pupils in both eyes: **Reactive, Non-Reactive, Pinpoint or Blown**.

When the Eyes are set to **Reactive**, the pupils re-size in response to changes in lighting condition. If both pupils are set to **Reactive**, both pupils re-size in a consensual manner.

The **Non-Reactive**, **Pinpoint** and **Blown** settings allow the user to fix one or both pupils to a specific size. The **Non-Reactive** setting fixes pupils to a normal size, the **Pinpoint** setting fixes pupils in the pinpoint position and the **Blown** setting fixes pupils in the blown position.

Default: Reactive

Eyes: Blinking

In **Auto** mode, the eyelids are normally blinking under the following conditions: Minute Ventilation is greater than 1500 mL, SpO_2 is greater than 70% and neuromuscular blockade (NMB) is less than 30%.

The **Blinking** and **Closed** settings allow the user to have one or both eyes either blinking or closed and override the automatic response.

Default: Auto

The **Slow**, **Normal** and **Fast** parameters control the eyelid blinking frequency. Presently, blinking frequency is not linked to the physiological models. However, the response can be done "on the fly" or scripted using the Scenario Designer.

Default: Normal

Convulsions

The **Convulsions** parameter is used to simulate the presence of convulsions. They are either **ON** or **OFF**.

Default: Off

Intracranial Pressure (ICP)

The **ICP** parameter is used to set the ICP displayed as a numeric value on the TouchPro monitor. The base value is set at 8 mmHg. This parameter is uninfluenced by physiological models.

Default: 8 mmHg

Range: 0.0 mmHg - 65.0 mmHg

Neuromuscular Blockade (NMB)

The pharmacokinetic and pharmacodynamic models based on the neuromuscular blocking agents administered and the time course of their injection automatically determines the degree of NMB. For some educational applications, however, the instructor may wish to set a fixed degree of neuromuscular blockade that remains stable for an indefinite period. This can be accomplished using the **NMB** parameter. The default setting instructs the pharmacologic models to determine the degree of neuromuscular blockade based upon the drugs injected and their pharmacologic properties.

When a positive numeric value is assigned to this parameter, the degree of NMB is set to that level. For example, 80% NMB causes the simulator to set the degree of NMB to 80%, regardless of the presence (or absence) of neuromuscular blocking drugs. Clinically, the spontaneous tidal volume is markedly reduced.

Default: Modeled

Range: 0% - 100%

Temperature: Body

The temperature measured at the body surface can be set using this parameter and can be displayed on the Patient Status Display and TouchPro software.

The body temperature is not linked to the physiologic models. However, changes can be made "on the fly" or scripted using the Scenario Designer.

Default: 36.5° C

Range: 32.0° C - 42.0° C

Temperature: Blood

The arterial blood temperature can be set using the **Temperature: Blood** parameter. The arterial blood temperature can then be displayed on the Patient Status Display and TouchPro software. Note that changes in arterial temperature may alter the shape of the standard oxyhemoglobin dissociation curve. As temperature increases or pH decreases, more oxygen is released from hemoglobin and thus the patient's saturation decreases. The inverse is also true.

Default: 37° C

Range: 32.0° C - 42.0° C

Respiratory Parameters

Respiratory Parameters
Swollen Tongue
Airway Occluder (Prehospital Only)
Laryngospasm (Prehospital Only)
Needle Decompression (Left and Right) (Prehospital Only)
Bronchial Occlusion
Respiratory Rate

Respiratory Parameters
SpO_2
NMB
Tidal Volume
Intrapleural Volume: Left Intrapleural Volume: Right
Chest Tube Flow: Left Chest Tube Flow: Right

Swollen Tongue

This parameter is used to create tongue swelling. The tongue is either **Swollen** or **Not Swollen**. The **Not Swollen** setting returns the tongue to its normal anatomic state.

Default: Not Swollen

Options: Not Swollen, Swollen

Airway Occluder (Prehospital Only)

Using the **Airway Occluder** parameter, swelling of the posterior oropharynx can be activated to obstruct the view of the larynx and prevent intubation but allow mask ventilation of the patient's lungs, thereby creating a "cannot intubate, can ventilate" scenario.

Default: Off

Laryngospasm (Prehospital Only)

Use the **Laryngospasm** parameter to simulate a laryngospasm. A laryngospasm actuator closes the patient's vocal cords and prevents both ventilation and intubation. When activated with the **Airway Occluder** parameter, a "cannot ventilate, cannot intubate" crisis scenario is achieved.

Default: Off

Needle Decompression (Left and Right) (Prehospital Only)

The **Needle Decompression** parameter is used to activate the **Needle Decompression** hardware in the simulator to relieve a pneumothorax in the simulator. This causes a rush of air to be heard on successful decompression. The amount of decompression is automatically subtracted from the **Intrapleural Volume** set.

Default: Off

Bronchial Occlusion

Turning on the **Bronchial Occlusion** parameter completely obstructs the right or left bronchi, simulating a lower airway obstruction (e.g., mucus plug). Improper intubation creates a main-stem occlusion, yielding an inability to ventilate the lungs. However, the right and left bronchi are not occluded individually.

Default: Off

Respiratory Rate

The **Respiratory Rate** parameter is used to set the respiratory rate to a given number of breaths per minute. Once set, arterial oxygen and carbon dioxide values have no effect on the resulting respiratory rate, but continue to influence other components of the physiological models. The patient continues to breathe at the set number of breaths per minute, regardless of the arterial oxygen or carbon dioxide levels.

For example, when the respiratory rate is set to 10 breaths per minute, the respiratory rate remains at 10 breaths per minute, regardless of arterial oxygen or carbon dioxide levels. In such situations, the patient can only respond to arterial oxygen or carbon dioxide levels by adjusting the **Tidal Volume** parameter.

Default: Modeled

Range: 4 breaths per minute - 40 breaths per minute

SpO_2

The SpO_2 parameter is used to override the normal pulmonary circulation and set the SpO_2 at a fixed numeric value, regardless of the oxygen applied. Resetting to **Modeled** returns control of the underlying SpO_2 to the physiological models.

Default: Modeled

Range: 0% - 100%

Neuromuscular Blockade (NMB)

The degree of NMB is automatically determined by pharmacokinetic and pharmacodynamic models, which are based on the neuromuscular blocking agents administered and the time course of their injection. For some educational applications, however, the instructor may wish to set a fixed degree of neuromuscular blockade that remains stable for an indefinite period. This can be accomplished using the **NMB** parameter. The default value instructs the pharmacologic models to determine the degree of neuromuscular blockade based on the drugs injected and their pharmacologic properties.

When a positive numeric any other positive value is assigned to this parameter, the degree of NMB is set to that level. For example, 80% NMB causes the simulator to set the degree of NMB to 80%, regardless of the presence (or absence) of neuromuscular blocking drugs. Clinically, the spontaneous tidal volume is markedly reduced.

Default: Modeled

Range: 0% - 100%

Tidal Volume

The **Tidal Volume** parameter is used to set the tidal volume to a given volume per breath. Once Tidal Volume is set to a numeric value, arterial oxygen and carbon dioxide values have no effect on the tidal volume, but continue to influence other components of the physiological models.

For example, with the tidal volume set to 600 mL in the adult simulator, the tidal volume

remains a constant (set) 600 mL even in the event of falling arterial oxygen levels. In such situations, the patient can only respond to arterial oxygen or carbon dioxide levels when the respiratory rate is adjusted.

Default: Modeled

Range: 0 mL- 2500 mL

Intrapleural Volume (Vol): (Left and Right)

The **Intrapleural Vol** parameters allow intrapleural volume to accumulate, for example, as happens during pneumothorax, hydrothorax or hemothorax.

To simulate a pneumothorax, set the corresponding **Intrapleural Vol** to a value greater than 0 mL. Values more than 1500 mL reduce the corresponding lung volume significantly. The breath sounds are automatically diminished on the appropriate side due to decreased ventilation of the affected lung.

Default: 0

Range: 0 mL - 2500 mL

Chest Tube Flow: (Left and Right)

The **Chest Tube Flow** parameter is used with the chest tube feature of the simulator. The Chest Tube Flow specifies the rate at which fluid can be removed from the simulated pleural space via a chest tube drainage system. As the chest tube drains, the volume is automatically subtracted from the set amount of Intrapleural Volume.

Default: 50 mL per minute

Range: 0 mL per minute - 50 mL per minute

Cardiovascular Parameters

Cardiovascular Parameters
Blood Pressure
Heart Rate
Cardiac Rhythm

Cardiovascular Parameters
Arterial Catheter
Central Venous Catheter
PA Catheter
PA Balloon
Defib
Pacing Current
Pacing Rate
Pacing Capture Threshold
Cold Fluid Inject

Blood Pressure

The **Blood Pressure** parameter is used to override the physiological modeling for blood pressure. The systolic and diastolic blood pressures can both be set to fixed numeric values, regardless of interventions performed. Resetting the parameter to **Modeled** returns control of the underlying Blood Pressure to the physiological models.

Default: Modeled

Range: Systolic 20 mmHg - 200 mmHg

Diastolic 10 mmHg - 200 mmHg

Heart Rate

The **Heart Rate** parameter is used to set the heart rate to a given (fixed) number of beats per minute. Once the heart rate is set to a numeric value, administered drugs or intravascular volume changes have no effect on the heart rate, but continue to influence other components of the physiological models. Use this parameter to "fix" or set the heart rate to a specific number.

Default: Modeled

Range: 30 beats per minute - 220 beats per minute

Cardiac Rhythm

The **Cardiac Rhythm** parameter is used to change the patient's underlying cardiac rhythm displayed on the Patient Status Display, TouchPro software or physiological monitor. To change the cardiac rhythm, click the **Cardiac Rhythm** parameter and select the desired rhythm from the available list. If a number appears following the cardiac rhythm on the list, this overrides the heart rate to the rate indicated.

Default: Modeled

Options: Modeled
Asystole
Atrial Enlargement, Left
Atrial Enlargement, Right
Atrial Fibrillation
Atrial Fibrillation: HR 120
Atrial Fibrillation: HR 80
Atrial Flutter with 2:1 AV Conduction
Atrial Flutter: HR 150
Atrial Tachycardia
AV Block, First-Degree
AV Block, Second-Degree - Mobitz I
AV Block, Second-Degree - Mobitz II
AV Block, Third-Degree
Bundle Branch Block, Incomplete Right
Bundle Branch Block: Left
Bundle Branch Block, Left with PVC 25%
Bundle Branch Block: Right
Hypercalcemia
Hyperkalemia
Hypertrophy, Biventricular
Hypertrophy, Left Ventricular
Hypertrophy, Right Ventricular
Hypocalcemia
Hypokalemia
Hypothermia
Junctional
Junctional: HR 50
Long QT Syndrome
Myocardial Infarction with LBBB
Myocardial Infarction, Anterior

Myocardial Infarction, Anterolateral
Myocardial Infarction, Inferior
Myocardial Infarction, Lateral
Myocardial Infarction, Posterior
Myocardial Infarction, Septal
Myocardial Ischemia: Mild
Myocardial Ischemia: Moderate
Myocardial Ischemia: Moderate with PVC 10%
Myocardial Ischemia: Severe
Paroxysmal Junctional Tachycardia
Paroxysmal Junctional Tachycardia: HR 130
Pericarditis
Premature Atrial Contraction
Premature Ventricular Contraction 10%
Premature Ventricular Contraction 25%
Pulseless Electrical Activity
Sinus
Sinus Bradycardia
Sinus Bradycardia: HR 40
Sinus Tachycardia
Sinus Tachycardia: HR 120
ST Elevation with Chest Pain
Torsade de Pointes
Trifascicular Block
Ventricular Fibrillation: Coarse
Ventricular Fibrillation: Fine
Ventricular Tachycardia
Ventricular Tachycardia: Pulseless
Ventricular Tachycardia: HR 151
Ventricular Tachycardia: Pulseless HR 151
Wellen's Syndrome
WPW Syndrome, Left Lateral Pathway

Arterial Catheter

The arterial pressure displayed on the Patient Status Display or TouchPro software is set using this parameter. A non-pulsatile, "zero" pressure signal is emitted when the **Atmosphere** position is selected and can be used to simulate zeroing a pressure transducer. This may also be used to remove the arterial pressure waveform, if desired. The **Left Ventricle** position is useful for simulating cardiac catheterization procedures, or for demonstrating left ventricular end-diastolic pressure and its relationship to pulmonary artery occlusion ("wedge") and central venous pressure.

Default: Peripheral Artery

Options: Atmosphere
Peripheral Artery
Left Ventricle

Central Venous Catheter

The venous pressure displayed on the Patient Status Display or TouchPro software is set using this parameter. A non-pulsatile, "zero" pressure signal is emitted when the **Atmosphere** position is selected and can be used to simulate zeroing a pressure transducer. This may also be used to remove the central venous pressure waveform, if desired (i.e., beginning of an SCE with an "unmonitored" patient).

Default: Intrathoracic Vein

Options: Atmosphere
Extrathoracic Vein
Intrathoracic Vein

Pulmonary Artery (PA) Catheter

The pulmonary artery pressure displayed on the Patient Status Display or TouchPro software is set using this parameter. A non-pulsatile, "zero" pressure signal is emitted when the **Atmosphere** position is selected and can be used to simulate zeroing a pressure transducer. This may also be used to remove the pulmonary artery pressure waveform, if desired (i.e., beginning of an SCE with an "unmonitored" patient). The pulmonary artery catheter can be "floated" into position by sequencing through the right heart positions. This may also be scripted into a scenario using the Scenario Designer.

Default: Pulmonary Artery

Options: Atmosphere
Intrathoracic Vein
Right Atrium
Right Ventricle
Pulmonary Artery

PA Balloon

Inflation of the pulmonary artery catheter balloon is simulated by switching to the **Inflated** option of the **PA Balloon** parameter. The appropriate pulmonary artery occlusion or "wedge" waveform is then displayed on the Patient Status Display or TouchPro software.

Default: Deflated

Options: Deflated
Inflated

Defibrillation (Defib)

The **Defib** parameter is used to simulate a specified amount of energy discharged via an external cardiac defibrillator. Setting this parameter results in the characteristic spike in the ECG, followed by a return to the pre-defibrillation rhythm. **Defib** has no direct effect on the electrical conduction system of the heart. Thus, synchronized cardioversion may be done "on the fly" or scripted using the Scenario Designer.

Default: 0 Joules

Range: 0 Joules- 360 Joules

Pacing Current

The **Pacing Current** parameter is used to simulate a specified amount of current discharged via an external cardiac pacer. Setting this parameter results in the characteristic pacing signal on the ECG waveform when the pacing current is at or above the capture threshold. Also, see **Pacing Capture Threshold**.

Default: 0 mA

Range: 0 mA- 200 mA

Pacing Rate

The **Pacing Rate** parameter determines the cardiac rate (in beats/minute) when the pacing current is at or above the pacing capture threshold. Also, see **Pacing Current** and **Pacing Capture Threshold**.

Default: 80 beats per minute

Range: 0 beats per minute - 119 beats per minute

Pacing Capture Threshold

The **Pacing Capture Threshold** parameter determines the minimum pacing current necessary to pace the heart via an external cardiac pacer. Also see **Pacing Current**. Pacing current values below the pacing capture threshold have no effect on the patient's heart rate.

Default: 50 mA

Range: 0 mA - 119 mA

Cold Fluid Inject

The **Cold Fluid Inject** parameter is used to simulate the injection of 10 mL iced saline into the pulmonary artery catheter. The appropriate Thermodilution waveform and cardiac output measurement are then displayed on the Patient Status Display or TouchPro software.

Pulses

The tables below show the defaults and ranges for the pulses and pulse deficits for METIman Prehospital and METIman Nursing.

METIman Prehospital

Pulse	Default	Range
Left Carotid	On	N/A
Right Carotid	On	N/A
Carotid Deficit	60	0 - 300
Left Brachial	On	N/A
Right Brachial	On	N/A
Brachial Deficit	80	0 - 300
Left Radial	On	N/A
Right Radial	On	N/A
Radial Deficit	90	0 - 300
Left Femoral	On	N/A
Right Femoral	On	N/A
Femoral Deficit	70	0 - 300
Left Popliteal	On	N/A
Right Popliteal	On	N/A
Popliteal Deficit	80	0 - 300
Left Dorsalis Pedis/ Left Posterior Tibial	On	N/A
Right Dorsalis Pedis/ Right Posterior Tibial	On	N/A
Dorsalis Pedis/ Posterior Tibial Deficit	80	0 - 300

METIman Nursing

Pulse	Default	Range
Left Carotid	On	N/A
Right Carotid	On	N/A
Carotid Deficit	60	0 - 300
Left Brachial	On	N/A
Right Brachial	On	N/A
Brachial Deficit	80	0 - 300
Left Radial	On	N/A
Right Radial	On	N/A
Radial Deficit	90	0 - 300
Left Femoral	On	N/A
Right Femoral	On	N/A
Femoral Deficit	70	0 - 300
Left Popliteal	On	N/A
Right Popliteal	On	N/A
Popliteal Deficit	80	0 - 300
Left Dorsalis Pedis	On	N/A
Right Dorsalis Pedis	On	N/A
Dorsalis Pedis Deficit	80	0 - 300
Left Posterior Tibial	On	N/A
Right Posterior Tibial	On	N/A
Posterior Tibial Deficit	80	0-300

All pulses, unless altered by an SCE, are enabled by default. To disable a pulse, click the pulse location on the human form. To enable a pulse, click the pulse location again. Click and hold a pulse location to adjust the pulse deficit.

Fluids

The blood droplet provides a means of controlling the amount of fluid lost by or infused into the patient. The amount of fluid to be lost or infused and the time frame during which the fluid loss or infusion takes place can be entered.

Fluid Parameters
Fluid Loss Blood
Fluid Loss Plasma
Colloid Infusion
Crystalloid Infusion
PRBC Infusion
Whole Blood Infusion
Bleeding: Upper
Bleeding: Lower

Fluid Loss Blood

When used, the **Fluid Loss Blood** parameter reflects a decrease in total blood volume. Blood loss proportionally decreases both the red blood cell volume and the plasma volume according to the current hematocrit.

Range: 0 mL - 4000 mL

Fluid Loss Plasma

When used, the **Fluid Loss Plasma** parameter reflects a decrease in plasma volume. Plasma loss decreases the plasma volume without changing the red blood cell volume. It refers collectively and generically to all fluid losses, including evaporative, transcellular, bowel and third space fluid losses.

Range: 0 mL - 4000 mL

Colloid Infusion

When used, the **Colloid Infusion** parameter reflects an addition to the plasma volume without changing the red blood cell volume. Colloids include modified fluid gelatin starch solutions, dextran and human albumin.

Range: 0 mL - 4000 mL

Crystalloid Infusion

When used, the **Crystalloid Infusion** parameter reflects an addition to the plasma volume without changing the red blood cell volume. The term crystalloid is used to describe salt solutions for infusion (i.e., normal saline, dextrose in water and Ringer's Lactate).

Range: 0 mL - 4000 mL

PRBC Infusion

Packed red blood cells are a preparation of 70% red blood cells and 30% liquid plasma, often administered in severe anemia to restore adequate levels of hemoglobin and red cells without overloading the vascular system with excess fluids.

Range: 0 mL - 4000 mL

Whole Blood Infusion

The term whole blood is used to refer to blood that has not been separated into its various components. It represents a preparation of 40% red blood cells and 60% liquid plasma.

Range: 0 mL - 4000 mL

Bleeding: Upper

The **Bleeding: Upper** parameter is used to activate the site of bleeding.

Default: Off

Bleeding: Lower

The **Bleeding: Lower** parameter is used to activate the site of bleeding.

Default: Off

Sounds

A variety of simulated sounds are available to enhance realism.

Bowel Sounds

Bowel Sounds
Normal
Hypoactive
Hyperactive
None

Normal, **Hypoactive**, **Hyperactive** and absent bowel sounds (**None**) are selected using this parameter. Independent control of the type and volume of bowel sounds may be selected in each anatomical region.

Bowel Sounds Locations
All Bowel Sounds
LUQ Bowel Sounds
RUQ Bowel Sounds
LLQ Bowel Sounds
RLQ Bowel Sounds

To affect the bowel sounds simultaneously in all anatomical regions, select **All Bowel Sounds** and the desired sound.

Default: Normal

NOTE: The volume control slider underneath each area may be used to adjust the amplitude of the sound.

Breath Sounds

Normal and abnormal breath sounds are selected using this parameter. Breath sounds are independently synchronized with ventilation of the left and right lungs. Independent control of the type and volume of breath sounds may be selected in each anatomical region.

Breath Sounds Locations
All Breath Sounds
Breath Left Upper Sounds
Breath Right Upper Sounds
Breath Left Lower Sounds
Breath Right Lower Sounds

Breath Sounds
Normal
Crackles
Diminished
Gurgling
Pleural Rub
Rhonchi
Wheezing

To affect the breath sounds simultaneously in all anatomical regions, select **All Breath Sounds** and the desired sound.

Default: Normal

NOTE: The volume control slider underneath each area may be used to adjust the amplitude of the sound.

Heart Sounds

Normal and abnormal heart sounds are selected using this parameter. Heart sounds are synchronized with the cardiac cycle.

Heart Sounds
Normal
S3
S4
S3 and S4
Early Systolic Murmur
Mid Systolic Murmur
Late Systolic Murmur
Pan Systolic Murmur
Late Diastolic Murmur

Default: Normal

NOTE: The volume control slider may be used to adjust the amplitude of the sound.

Speech Sounds

Speech Sounds include a male or female voice, based on the gender of the active patient, that can utter pain rating indicators from 0 to 10, various phrases and a series of other utterances. Unlike Vocal Sounds, Speech Sounds only play once.

Speech Sounds
Loud cough
Soft cough
Short Loud Cough
Short Soft Cough
Scream
Grunt
"Yes"
"No"
"Sometimes"
"Ouch"
"10, 9, 8, 7, 6..."
"My leg hurts"
"My belly hurts"
"My chest is tight"
"I can't breathe"
"Ow, that hurts"
"0" through "10" - Pain Ratings
"Sharp"
"Pressure"
"Aching"
"Dull"
"Stabbing"

To play a Speech Sound, click the Speech balloon. A list of Speech Sounds appears.

Select the desired sound. The sound plays once, and the list disappears.

To replay the last sound, click the **Play** button in the Speech balloon.

Throat Sounds

The **Stridor** throat sounds option from the simulator is selected using the **Throat Sounds** parameter. The stridor is synchronized with ventilation of both lungs.

Default: None

NOTE: The volume control slider may be used to adjust the amplitude of the sound.

Vocal Sounds

To have the simulator emit the various vocal sounds, select the one desired. It immediately begins to play in a continuous loop until **None** is selected.

A variety of programmable Vocal Sounds are available. Vocal Sounds are male or female based on the gender of the active patient.

Vocal Sounds
None
Crying
Gagging
Gasping
Groaning
Long Loud Cough
Long Soft Cough
Wheezing
Mumbling

To select a sound from the **Vocal Sounds** drop-down menu, click the **Sounds** button on the Run screen. The Sounds panel appears.

Click **Vocal Sounds** and select the type of sound desired from the **Vocal Sounds** drop-down menu.

Default: None

NOTE: The volume control slider may be used to adjust the amplitude of the sound.

Appendix B - Wireless Voice Link

This information is intended to assist in preparing Wireless Voice Link (WVL) devices for use in conjunction with METIman.

Cautions and Warnings

This device complies with part 15 of the FCC Rules and with Industry Canada licence-exempt RSS standard(s). Operation is subject to the following two conditions:

1. This device may not cause interference.
2. This device must accept any interference, including interference that may cause undesired operation of the device.

Cet appareil est conforme aux normes d'Industrie Canada exempts de licence RSS (s). Son fonctionnement est soumis aux deux conditions suivantes:

1. Cet appareil ne doit pas provoquer d'interférences.
2. Cet appareil doit accepter toute interférence, y compris les interférences pouvant provoquer un fonctionnement indésirable de l'appareil.

Any modifications made to this device without the express approval of CAE could void the user's authority to operate this equipment.

What's Included

The WVL package includes the following items:

- Wireless Voice Link Handset (1)
- Olympus ME52W Standalone Microphone (1)
- AAA Alkaline Batteries (2)
- Quick Start Guide (1)

How It Works

The WVL is a radio pair that operates in the 2.4 GHz unlicensed radio band. The handset communicates wirelessly with the base station located inside the simulator. The base station converts the digitized microphone stream from the handset and outputs it via the base station to the headphone and line out jacks. The output projects through the head speakers inside the simulator.

To accommodate multiple WVL pairs in close proximity, each WVL is assigned two RF channels on which to operate. The RF channels divide up the 2.400 – 2.4835 GHz spectrum in 80 single frequencies to prevent the WVLs from interfering with each other.

Due to the nature of the unlicensed 2.4 GHz band, there may be other devices such as Wi-Fi, microwave ovens or Bluetooth® radios operating in the 2.4 GHz band as well. Therefore, two channels are used to transmit the audio stream redundantly to avoid interference. In case there is an interference in one channel, the other can be used to extract the audio stream.

To operate correctly, both the handset and base station should be set to the same frequency using the DIP switches located in the devices. If the interference is too high, the WVL firmware has the ability to change channels automatically to avoid interruption. This process occurs simultaneously in both the handset and the base station without the need for user intervention. The units revert back to the original frequency set on the DIP switches when both devices are restarted using the power switch.

Recommendations for Use

To receive the best sound quality from the WVL, please note the following recommendations:

- Do not separate the WVL pair with more than two walls.
- Use channels 0 through 11 for the best sound quality.
- Use channels 12 through 31 if more than 12 simulators are present in one area.

Wireless Voice Link Devices

There are two unique devices that make up a WVL pair: the handset device and the base station device. The base station device is located inside the simulator, while the handset device is battery powered and carried by the user. The handset transmits voice input through a microphone to the base station receiver, where it is transmitted to the speakers in the simulator's head. The two different devices can be identified by their cases.

The handset device has a cover that extends over the length of the antenna.

Figure 1: WVL Handset

The base station device antenna is almost fully exposed.

Figure 2: WVL Base Station

Physical Features

The following features are located on the top of the WVL devices:

- **Headphone jack:** Used to plug in headphones or an iPhone compatible headphone/ microphone combination
- **Microphone jack:** Used to plug in a standalone microphone
- **Red power light:** Indicates when the unit is powered on by blinking. Also indicates when the Mute button is activated by solidly staying on.
- **Green connection light:** Indicates an RF link connection between the handset and base station by blinking.
-

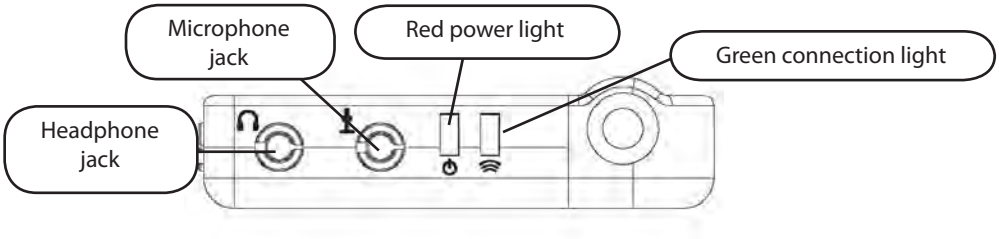


Figure 3: ***WVL Front View***

The following features are located on the side of the WVL devices:

- **Battery compartment:** Houses two AAA batteries and the DIP switch.
- **DC power jack:** Accommodates a 5VDC/0.2A power source.
- **ON/OFF switch:** Turns WVL handset power on or off.
- **Line out jack:** Connects the WVL to the simulator's audio amplifier.
- **Volume/mute dial:** Controls microphone gain and microphone mute on the handset. See *Special Handset Settings* on page B-10

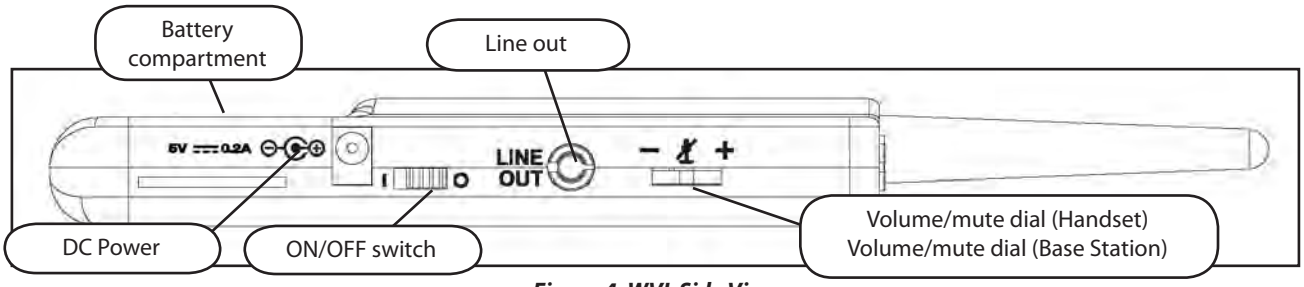


Figure 4: WVL Side View

On the WVL handset, the volume/mute dial controls the microphone volume or mutes the microphone. See *Special Handset Settings* on page B-10.

On the WVL base station, the dial serves as the volume control for the speakers inside the simulator. Moving the dial toward the plus sign increases the volume. Moving the dial toward the minus sign decreases the volume and setting. On the handset, pressing straight down on the volume dial in the center mutes the microphone.

Preparing the Base Station in the Simulator

When using the base station in the simulator, ensure the batteries are removed and the following items are attached:

- Power cable
- Line out cable
- Serial Connector

The DIP switch is located in the battery compartment of the base station (Figure 5: DIP Switch Settings).

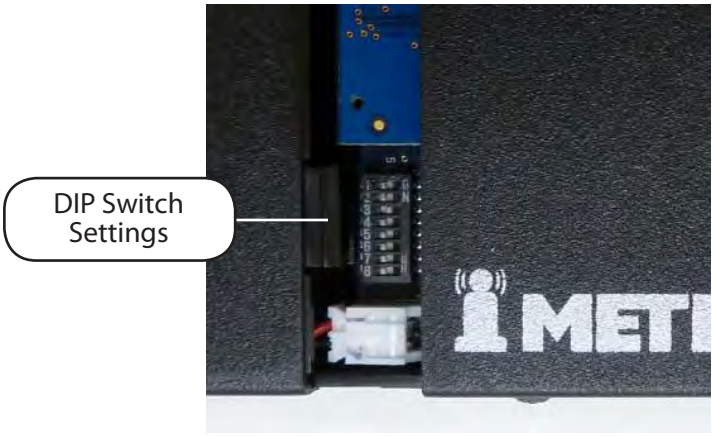


Figure 5: Dip Switch Settings

The serial connector is located on the side of the base station (Figure 6: Serial Connector).

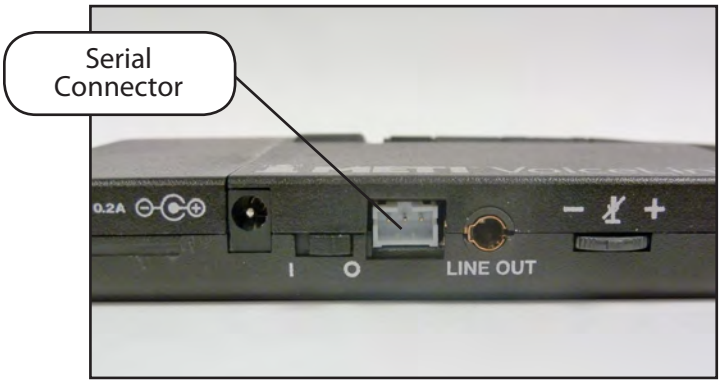


Figure 6: Serial Connector on base station

The base station should come already connected and installed inside the METIman.

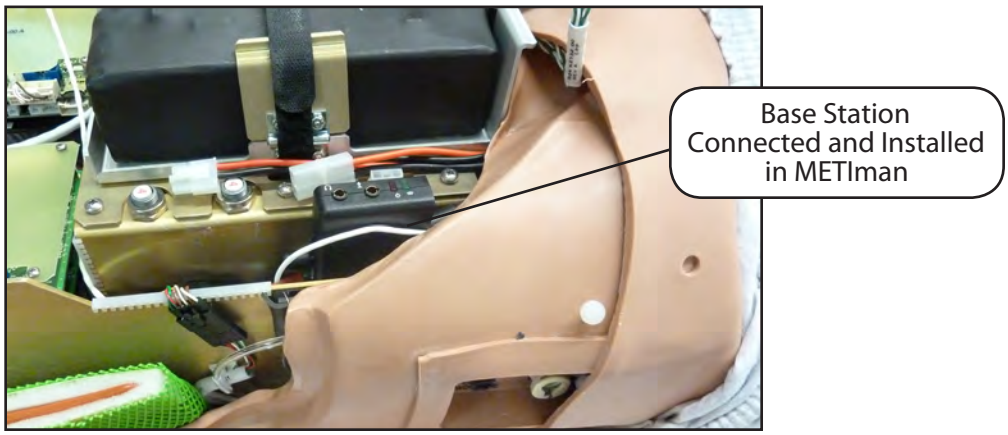


Figure 7: Base Station in METIman

To prepare the base station:

3. Set the base station DIP switch positions 6 and 7 to OFF, and 8 to ON.
4. Turn the power off and on using the power switch on the outside of the base station to ensure the DIP switch changes take effect.
5. Leave the power switch on the outside of the base station in the on position.

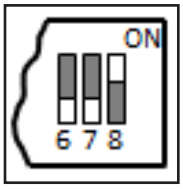


Figure 8: DIP Switch Settings for the Base Station

NOTE: Since the base station receives power from the simulator, the power switch on the outside of the base station must remain in the ON position. Use this power switch to refresh DIP switch settings. Do not turn the simulator off and on to refresh the DIP switch settings.

Preparing the Handset for Use

To prepare the handset for use:

1. Insert two AAA batteries into the battery compartment.
2. Set the handset DIP switch positions 6 and 7 to OFF and position 8 to ON.
3. Turn the power switch off and back on to ensure the DIP switch changes take effect.

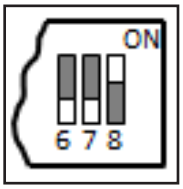


Figure 9: DIP Switch Settings for the Handset

While DIP switch positions 6 through 8 affect the handset and base station settings, DIP switch positions 1 through 5 are used to set the radio frequency channel used for communication between the handset and the base station.

Selecting the Radio Frequency Channel

There are two ways to configure the radio frequency (RF) channel spacing. The first method reduces channel-to-channel interference, but allows only 12 channels to operate simultaneously in the same vicinity. The second method increases the number of channels that can be used simultaneously to 20 channels. However, this method diminishes the channel-to-channel noise immunity.

All of the WVL pairs in the same vicinity must use channels from RF Channel Group 1 or RF Channel Group 2, and channels must belong to the same group. The DIP switch determines the initial communication frequencies that the WVL pair use to communicate when the power of the base station and handset is first turned on. If there is too much interference at the initial channel, the WVL pair changes frequency automatically and continues operating. The WVL pair repeats this process automatically as needed and changes frequencies when interference is too high.

Multiple WVL pairs can be set to the same initial frequency. However, setting different initial frequencies helps the WVL pairs quickly find a stable operating frequency.

For example, if there are 12 or fewer simulators in the same vicinity, set all of the WVL pairs to use channel 0 of RF Channel Group 1. To give unique initial RF frequencies, assign each WVL pair to its own RF channel with the settings found in CH 0 through CH 11.

If you have 13 to 20 simulators in the same vicinity, set all of the WVL pairs to use channel 12 of RF Channel Group 2. To give unique initial RF frequencies, assign each WVL pair to its own RF channel with the settings found in CH 12 through CH 31.

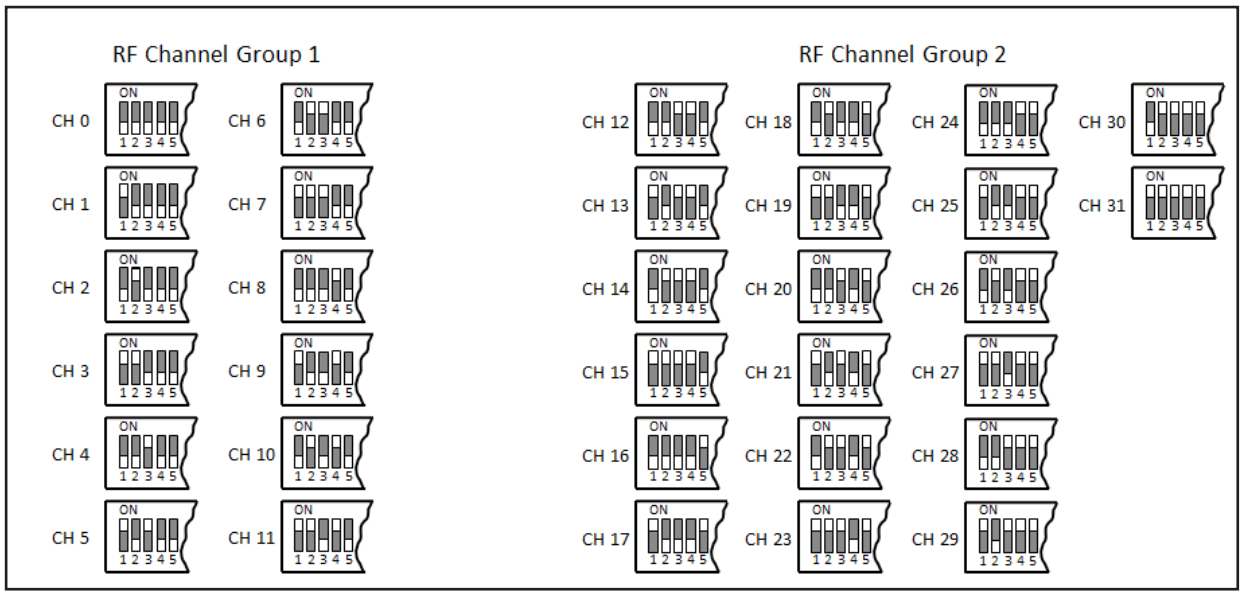


Figure 10: RF Channel Selection Methods

For a complete list of the initial frequencies associated with the RF Channels, see *RF Channel Initial Operating Frequencies* on page B-13.

Powering Up the WVL Pair

To power up the WVL pair:

Power on the base station by turning on the simulator. The base station power switch is in the on position by default.

Power on the handset by setting the power switch to the on position.

The red power light on each unit blinks when the unit is on. Once both units are powered on and communicating with each other, the green connection light flashes once every second.

If the green connection light fails to blink, ensure both units are set to the same RF channel. See *Selecting the Radio Frequency Channel* on page B-7. If you make changes to the DIP switch settings, toggle the power switches of the handset and base station off and back on to ensure the changes takes effect.

Using the iPhone/Standalone Microphone

DIP switch position 6 on the handset determines if the iPhone microphone input or the standalone microphone input is enabled. When DIP switch position 6 is set to the OFF position, the standalone microphone jack is enabled for the standalone microphone, provided by CAE Healthcare.

Figure 11: Handset and CAE Healthcare-provided Microphone

To use a microphone compatible with an iPhone (three-pole jack), set DIP switch position 6 to ON. Please note that an iPhone-compatible microphone is not provided as part of the product package. Any microphone with a common 3.5 mm input jack can be used with the handset when DIP switch position 6 is set to ON.

Special Handset Settings

Advanced settings for the handset DIP switch are available.

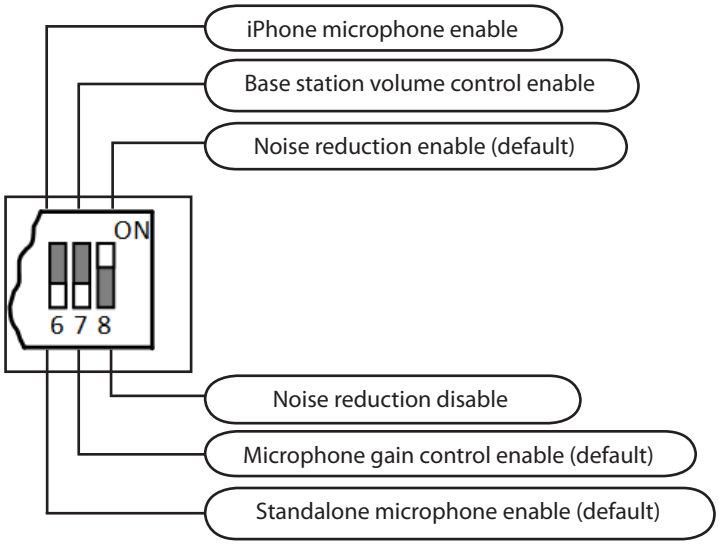


Figure 12: Advanced DIP Switch Settings

DIP switch settings are only refreshed when the handset is powered on. To ensure the DIP switch changes take effect, turn the power off and back on after making changes.

To enable noise reduction and minimize background noise in high ambient noise environments, place the position 8 DIP switch in the ON position.

Battery Capacity Indicator

The red power light flashes one time every second when the battery capacity is good. When the battery capacity is nearly depleted, the red power LED flashes twice in quick succession every second. This indicates the batteries need to be replaced.

To get the most battery life out of the handset, the handset should be powered down when it is not in use.

Troubleshooting

CAE Healthcare Customer Service is available to help with iStan problems, should they arise. However, sometimes you can speed up the customer service process by performing diagnostics before calling, and eliminating some problems on your own with the help of the following instructions.

Power Problems

The red power light on the handset does not flash when power switch is turned on.

- Check that the batteries are inserted correctly. Install a fresh set of batteries, if needed.

The red power light on my base station is not flashing when the simulator is powered on.

- Check that the cables from the simulator are installed in the base station correctly.

Communication Problems

The simulator and handset are turned on, but the green connection light is not blinking.

- Verify that DIP switch positions 1 through 5 are all set to OFF, which is the default position set in the simulator base station and handset at the factory. If you have modified this setting, verify positions 1 through 5 on the handset and the simulator base station are the same.
- Be sure to turn the power off and back on for the changes to take effect on both the handset and the base station. Check if the green connection light is flashing after turning the power off and back on each time to see if communication has been established between the base station and the handset.

I'm experiencing static or dropouts in the simulator audio output.

- Reduce the range between the base station and the handset. Most likely, the handset is out of range of the base station, or there may be too many obstacles (walls, windows, doors) between the handset and the simulator.

Audio Problems

The sound output from the simulator is low when using a microphone on my lapel.

- Increase the microphone gain on the handset by moving the dial towards the plus sign. DIP switch 7 must be in the OFF position for this to work.

I'm hearing feedback from the microphone when I am close to the simulator.

- Decrease the microphone gain on the handset by moving the dial towards the minus sign. DIP switch 7 must be in the OFF position for this to work.

The sound output from the simulator is too high or too low.

- The volume level is configured at the factory for optimal performance. However, if you want to adjust the volume level of the base station (located inside the simulator), set the handset DIP switch 7 to ON. Remember to turn the handset power off and on after each DIP-switch change. After this step is complete, you will be able to adjust the volume level of the base station by adjusting the handset volume dial.

The sound output from the simulator is noisy when the speaker is not speaking.

- You can use the noise reduction feature by setting the handset DIP switch position 8 to ON.

The simulator voice output is cut off when the speaker is speaking quietly.

- In this case, there are three possible options:
  - Attempt to talk louder
  - Increase the microphone gain
  - Disable the noise reduction feature by setting the handset DIP switch 8 to OFF.

RF Channel Initial Operating Frequencies

RF Channel	Frequency 1 (GHz)	Frequency 2 (GHz)
0	2.402	2.480
1	2.405	2.477
2	2.408	2.474
3	2.411	2.471
4	2.414	2.468
5	2.417	2.465
6	2.420	2.462
7	2.423	2.459
8	2.426	2.456
9	2.429	2.453
10	2.432	2.450
11	2.435	2.447
12	2.402	2.480
13	2.404	2.478
14	2.406	2.476
15	2.408	2.474
16	2.410	2.472
17	2.412	2.470
18	2.414	2.468
19	2.416	2.466
20	2.418	2.464
21	2.420	2.462
22	2.422	2.460
23	2.424	2.458
24	2.426	2.456
25	2.428	2.454
26	2.430	2.452
27	2.432	2.450
28	2.434	2.448
29	2.436	2.446
30	2.438	2.444
31	2.440	2.442

Specifications

Frequency of operation: 2.400 – 2.4835 GHz

Wireless range: 100 ft clear line of sight

RF power output: 0dBm

Batteries: 2 AAA Alkaline, NiCd, NiMH, Lithium

Handset battery life with base station on: 25 hours with alkaline batteries

Handset battery life with base station off: 100 hours with alkaline batteries

DC voltage input: 5 VDC, 0.2A

Line out jack: 3.5 mm

Headphone/iPhone jack: 3.5 mm

Standalone microphone jack: 3.5 mm

Mechanical dimensions with antenna: 6.17″ x 2.52″ x 0.65″

Mechanical dimensions without antenna: 4.2″ x 2.52″ x 0.65″

CAE Healthcare

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